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GLOBAL DATA MONITORING REPORT

June, 1997

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of AIREP/ASDAR reports received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-12 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

N.B. 500 km SATEMs are no longer assimilated into the UKMO global Unified Model. Both 500 km and 120 km SATEMs were replaced on 16th April 1996 by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS (from NOAA-12 and NOAA-14).

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area
10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS $\geq$ 20 , and one or more of the following:

1.¦bias¦ $\geq$ 4 hPa (pressure),
$\geq$ 5 m s^{-1} (wind speed),
$\geq$ 30 degrees (direction).

2.SD $\geq$ 6 hPa (pressure),
$\geq$ 80 degrees (direction).

3.PGE $\geq$ 25

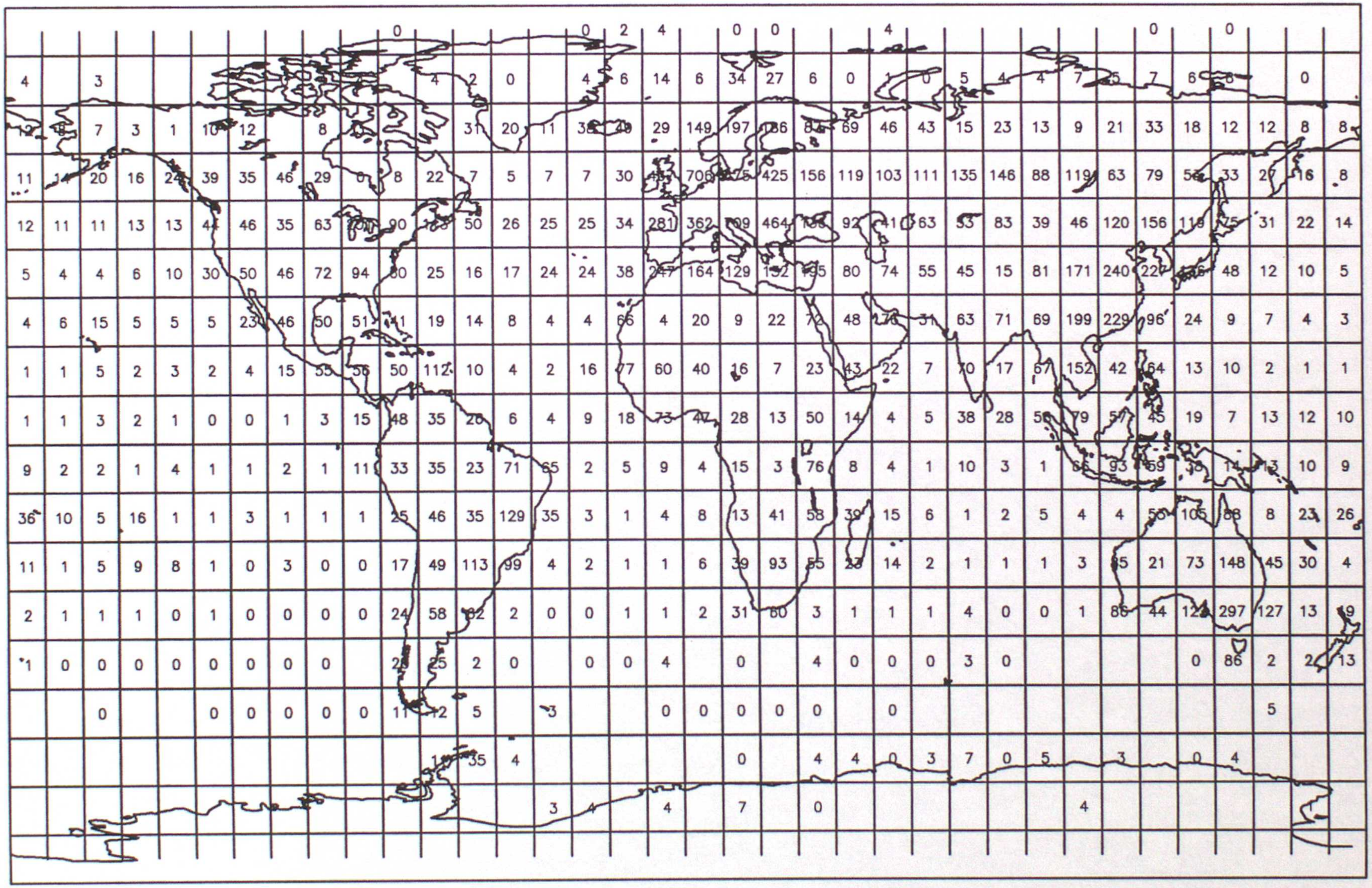
N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
CG2248	ALL	MSLP	SUR	58	58	100	0.0	0.0	0.0
CYGR	ALL	MSLP	SUR	22	16	73	3.6	-11.1	11.7
C6FA6	ALL	MSLP	SUR	25	0	0	1.1	-5.9	6.0
DLDQ	ALL	MSLP	SUR	40	0	0	1.0	-4.6	4.7
DLID	ALL	MSLP	SUR	60	7	12	3.9	-5.8	6.9
DOWVD2D	ALL	MSLP	SUR	52	0	0	1.0	5.0	5.1
D3FXT6D	ALL	MSLP	SUR	22	0	0	1.3	5.2	5.4
EUAF	ALL	MSLP	SUR	21	3	14	3.9	7.0	8.0
LAVV4	ALL	MSLP	SUR	32	0	0	2.2	-5.2	5.7
PJKP	ALL	MSLP	SUR	25	0	0	3.2	-5.4	6.3
UCJL	ALL	MSLP	SUR	37	0	0	1.0	9.5	9.6
UQDB	ALL	MSLP	SUR	44	0	0	1.6	6.4	6.6
VCLX	ALL	MSLP	SUR	34	34	100	0.0	0.0	0.0
VCQL	ALL	MSLP	SUR	22	0	0	0.8	-5.9	5.9
VCTK	ALL	MSLP	SUR	22	1	5	1.7	-6.6	6.8
VGNW	ALL	MSLP	SUR	29	20	69	4.9	-7.4	8.9
VOXZ	ALL	MSLP	SUR	21	14	67	3.3	-10.5	11.0
V2SA	ALL	MSLP	SUR	22	3	14	2.0	-11.6	11.8
V2SM	ALL	MSLP	SUR	37	0	0	1.3	-5.3	5.4
WAR7324	ALL	MSLP	SUR	20	1	5	5.8	-4.6	7.4
3EIY6	ALL	MSLP	SUR	31	2	6	2.3	11.5	11.7
3EUY3	ALL	MSLP	SUR	30	0	0	1.6	11.2	11.3
3FHT4	ALL	MSLP	SUR	20	6	30	3.3	-2.1	3.9
31024	ALL	MSLP	SUR	348	154	44	0.9	7.9	8.0
4XFN	ALL	MSLP	SUR	28	0	0	1.5	-4.9	5.2
9MBW7	ALL	MSLP	SUR	30	0	0	1.6	5.0	5.2
9VHU	ALL	MSLP	SUR	24	0	0	1.6	5.8	6.0
WIND SPEED									
DVFS	ALL	SPEED	SUR	54	0	0	2.5	5.8	6.4
ELDT6	ALL	SPEED	SUR	23	0	0	4.9	7.4	8.9
FNQI	ALL	SPEED	SUR	24	0	0	6.6	7.0	9.6
GQEK	ALL	SPEED	SUR	25	0	0	6.3	7.4	9.7
VNGK	ALL	SPEED	SUR	31	1	3	5.1	7.5	9.1
3FHE4	ALL	SPEED	SUR	39	0	0	3.5	5.1	6.2
3FSL4	ALL	SPEED	SUR	33	0	0	3.1	5.0	5.9
8PNH	ALL	SPEED	SUR	57	0	0	4.5	7.7	8.9
9VMY	ALL	SPEED	SUR	23	1	4	7.4	11.2	13.4
WIND DIRECTION									
DLID	ALL	DIRN.	SUR	27	0	0	45.0	30.4	54.3
DVFS	ALL	DIRN.	SUR	53	0	0	89.8	6.7	90.0
MWST6	ALL	DIRN.	SUR	20	0	0	54.5	-34.6	64.5
PFEZ	ALL	DIRN.	SUR	23	0	0	50.8	-30.8	59.4
UVGF	ALL	DIRN.	SUR	47	0	0	96.0	26.5	99.6
45002	ALL	DIRN.	SUR	42	0	0	32.4	-37.1	49.2
45006	ALL	DIRN.	SUR	30	0	0	42.9	-33.5	54.5
45007	ALL	DIRN.	SUR	33	0	0	40.7	-35.6	54.1
45008	ALL	DIRN.	SUR	26	0	0	26.1	-31.0	40.5
45139	ALL	DIRN.	SUR	32	0	0	55.6	-41.9	69.6
45142	ALL	DIRN.	SUR	25	0	0	35.6	-41.2	54.5
46060	ALL	DIRN.	SUR	47	0	0	96.5	-17.4	98.1
51020	ALL	DIRN.	SUR	37	0	0	84.8	-11.0	85.6
51021	ALL	DIRN.	SUR	21	0	0	44.4	-47.7	65.2
51307	ALL	DIRN.	SUR	29	0	0	98.1	-7.1	98.3

AVAILABILITY – SHIP/SYNOP – JUNE 1997

FIGURE 1

MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 18653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11 14 20 16 24 39 35 46 29 0 8 22 7 5 7 7 30 43 706 375 425 156 119 103 111 135 146 88 119 63 79 56 33 27 16 8
12 11 11 13 13 44 46 35 63 200 90 123 50 26 25 25 34 281 362 309 464 106 92 41 63 53 83 39 46 120 156 118 75 31 22 14
5 4 4 6 10 30 50 46 72 94 80 25 16 17 24 24 38 247 164 129 152 195 80 74 55 45 15 81 171 240 227 136 48 12 10 5
4 6 15 5 5 5 23 46 50 51 41 19 14 8 4 4 66 4 20 9 22 72 48 176 31 63 71 69 199 229 96 24 9 7 4 3
1 1 5 2 3 2 4 15 55 56 50 112 10 4 2 16 77 60 40 16 7 23 43 22 7 70 17 67 152 42 64 13 10 2 1 1
1 1 3 2 1 0 0 1 3 15 48 35 26 6 4 9 18 73 47 28 13 50 14 4 5 38 28 56 79 57 45 19 7 13 12 10
9 2 2 1 4 1 1 2 1 11 33 35 23 71 65 2 5 9 4 15 3 76 8 4 1 10 3 1 65 93 59 38 14 13 10 9
36 10 5 16 1 1 3 1 1 1 25 46 35 129 35 3 1 4 8 13 41 58 39 15 6 1 2 5 4 4 56 105 88 8 23 26
11 1 5 9 8 1 0 3 0 0 17 49 113 99 4 2 1 1 6 39 93 55 23 14 2 1 1 1 3 85 21 73 148 145 30 4
2 1 1 1 0 1 0 0 0 0 24 58 82 2 0 0 1 1 2 31 60 3 1 1 1 4 0 0 1 86 44 123 297 127 13 19
1 0 0 0 0 0 0 0 0 28 25 2 0 0 0 4 0 4 0 0 0 3 0 0 86 2 2 13
0 0 0 0 0 0 11 12 5 3 0 0 0 0 0 0 5
10 35 4 0 4 4 0 3 7 0 5 3 0 4
3 4 4 7 0 4

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period		:One calendar month.	
Data monitored		:Reports from each unique identifier for drifting buoys.	
Standard of comparison		:Background field from Bracknell global model.	
Position		:Average latitude and longitude for period.	
Observation times		:00, 06, 12, 18 UTC	
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).	
Parameters monitored			
	:NOBS	:Number of observations received excluding duplicates.	
	:NGE	:Number of observations with gross errors.	
	:PGE	:Percentage of observations with gross errors.	
	:SD	:SD of difference of observations from background values excluding those with gross errors.	
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**	
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.	
GROSS ERROR LIMIT	:15 hPa :25 m s^{-1}	(pressure) (vector wind)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.¦bias¦	$\geq$ 4 hPa	(pressure),
		$\geq$ 5 m s^{-1}	(wind speed),
		$\geq$ 30 degrees	(direction).
	2.SD	$\geq$ 6 hPa	(pressure),
		$\geq$ 80 degrees	(direction).
	3.PGE	$\geq$ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
17506	-51.7	7.1	ALL	MSLP	SUR	143	1	1	2.6	-6.7	7.1
17907	-37.8	5.9	ALL	MSLP	SUR	169	21	12	4.2	4.9	6.4
25573	83.4	-4.0	ALL	MSLP	SUR	80	80	100	0.0	0.0	0.0
32908	-34.1	-94.7	ALL	MSLP	SUR	42	12	29	3.2	10.5	11.0
33952	-41.4	-11.0	ALL	MSLP	SUR	143	16	11	3.6	5.7	6.8
54901	-42.9	-167.2	ALL	MSLP	SUR	27	27	100	0.0	0.0	0.0
55516	-7.7	82.3	ALL	MSLP	SUR	201	0	0	1.0	-4.2	4.3
WIND SPEED											
62803	58.6	-14.1	ALL	SPEED	SUR	324	1	0	4.0	-6.1	7.3
WIND DIRECTION											
44513	52.9	-22.5	ALL	DIRN.	SUR	72	0	0	66.6	35.1	75.2

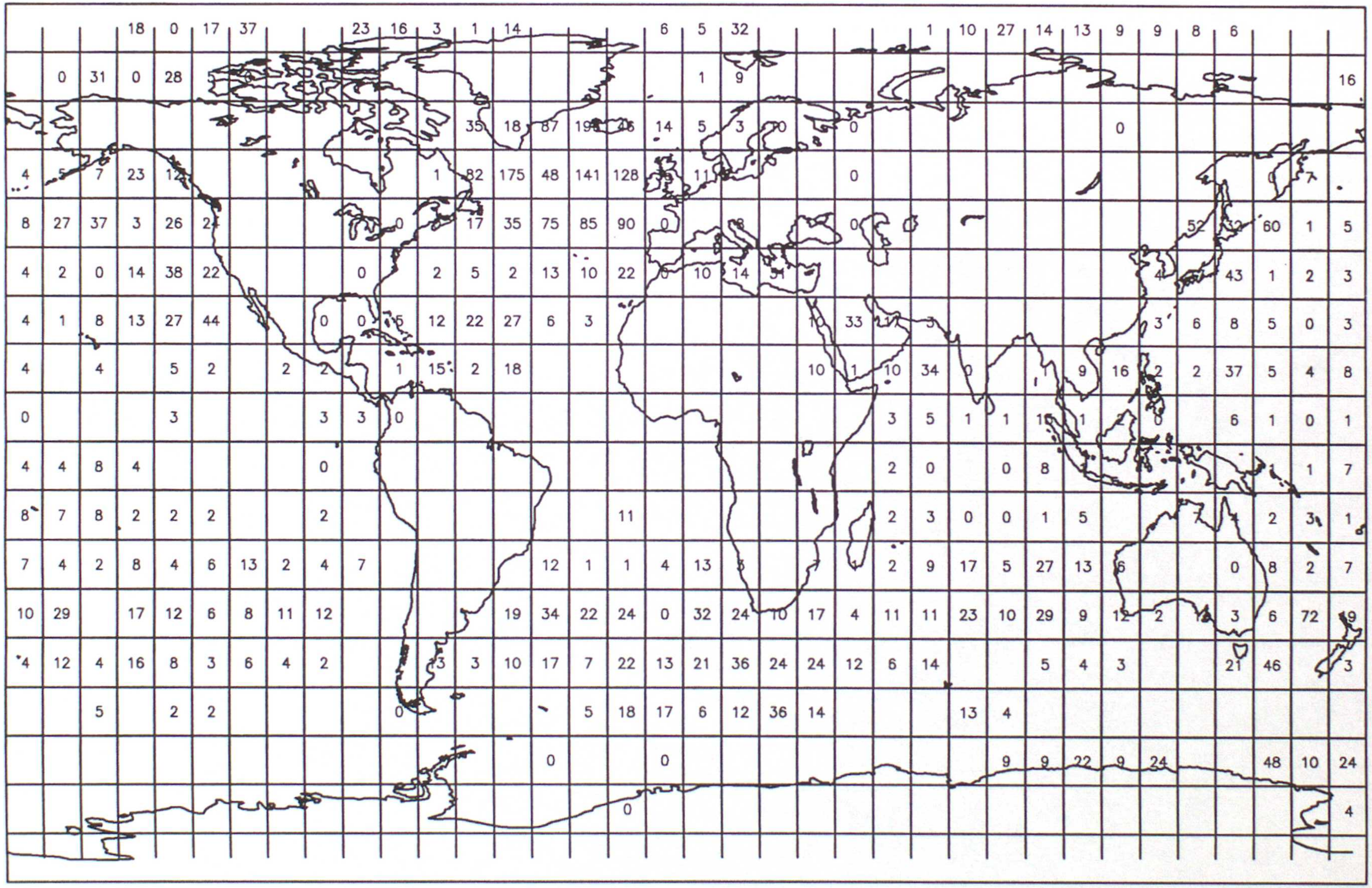
AVAILABILITY – DRIFTER – JUNE 1997

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 4313

FIGURE 2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0 31 0 28 1 9 16
35 18 87 14 5 3 0 0 0
4 5 7 23 12 1 82 175 48 141 128 11 0 0 7
8 27 37 3 26 24 0 17 35 75 85 90 0 0 52 60 1 5
4 2 0 14 38 22 0 2 5 2 13 10 22 0 10 14 4 43 1 2 3
4 1 8 13 27 44 0 0 5 12 22 27 6 3 10 33 3 3 6 8 5 0 3
4 4 5 2 2 2 1 15 2 18 10 1 10 34 0 9 16 2 2 37 5 4 8
0 3 3 3 0 3 5 1 1 1 1 2 0 6 1 0 1
4 4 8 4 0 2 0 0 8 1 1 7
8 7 8 2 2 2 2 11 2 3 0 0 1 5 7 4 2 3 1
7 4 2 8 4 6 13 2 4 7 12 1 1 4 13 3 7 1 2 9 17 5 27 13 6 0 8 2 7
10 29 17 12 6 8 11 12 19 34 22 24 0 32 24 10 17 4 11 11 23 10 29 9 12 2 3 6 72 19
4 12 4 16 8 3 6 4 2 3 3 10 17 7 22 13 21 36 24 24 12 6 14 5 4 3 21 46 3
5 2 2 0 5 18 17 6 12 36 14 13 4
0 0 9 9 22 9 24 48 10 24
0 4

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.¦bias¦	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	109	7	6	3	1.4	4.2	4.4
60468	35.6N	6.2E	1052	S8	110	110	100	0	0.0	0.0	0.0
60511	35.3N	1.4E	1127	S8	112	109	97	0	0.0	14.8	14.8
60535	34.7N	3.3E	1144	S8	84	1	1	0	1.1	-6.7	6.8
60571	31.6N	2.2W	773	S8	112	0	0	1	1.4	-4.6	4.8
60670	24.6N	9.5E	1054	S8	102	3	3	95	1.3	8.3	8.4
61233	15.2N	7.3W	265	M	79	0	0	0	1.2	-4.5	4.7
62402	26.2N	32.7E	77	M	47	47	100	0	0.0	0.0	0.0
63330	13.5N	39.5E	2212	MS	55	2	4	0	0.9	-4.3	4.4
63333	11.1N	39.7E	1916	MS	77	1	1	4	1.3	6.8	6.9
63451	8.7N	39.0E	1876	MS	57	0	0	2	2.1	-4.9	5.3
63453	8.8N	39.8E	1062	S	51	3	6	0	1.8	11.5	11.6
63478	5.1N	44.6E	320	MS	51	0	0	0	0.8	6.7	6.7
68014	19.6S	18.1E	1411	S8	87	0	0	84	1.0	-6.1	6.2
68442	29.1S	26.3E	1354	S8	116	0	0	0	0.9	-5.5	5.6
68488	28.4S	31.1E	1279	S8	82	82	100	0	0.0	0.0	0.0
68752	32.8S	27.4E	524	S8	96	0	0	0	1.1	-8.2	8.3

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30320	56.9N	105.7E	669	MS	53	53	100	0	0.0	0.0	0.0
30554	54.5N	113.6E	995	MS	52	1	2	63	1.3	10.0	10.1
35173	51.6N	69.8E	620	MS	57	57	100	0	0.0	0.0	0.0
40701	39.3N	44.4E	1470	MS	50	0	0	0	1.1	6.4	6.5
40740	36.8N	54.3E	1287	MS	33	1	3	6	1.4	-4.1	4.3
40743	36.2N	57.7E	941	MS	109	0	0	0	1.3	-5.6	5.7
40762	35.3N	59.2E	1333	MS	108	13	12	0	1.5	-13.6	13.7
40763	35.2N	58.5E	1060	MS	36	0	0	0	1.3	-6.5	6.6
40783	32.4N	49.7E	1972	MS	45	0	0	0	1.4	-5.6	5.8
40789	33.8N	55.1E	921	MS	44	0	0	2	2.6	7.0	7.5
40798	32.3N	50.9E	1991	MS	48	0	0	0	1.2	-7.8	7.9
40836	30.8N	51.7E	1880	MS	41	1	2	2	1.1	8.3	8.4
40859	29.0N	53.7E	1383	MS	48	2	4	0	1.2	8.6	8.7
41254	23.1N	57.7E	1755	S8	89	89	100	0	0.0	0.0	0.0
41396	16.0N	48.9E	700	S	23	1	4	4	1.3	6.0	6.1
44298	46.4N	108.2E	1286	MS	36	0	0	39	1.2	4.4	4.6
44477	27.0N	87.4E	1445	S8	48	48	100	0	0.0	0.0	0.0
51573	42.9N	89.2E	37	MS	119	0	0	2	1.6	-4.1	4.4
52602	38.8N	93.4E	2734	S	119	0	0	0	1.5	-5.0	5.2
56444	28.5N	98.9E	3488	S	93	93	100	0	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	111	0	0	2	2.0	7.8	8.1

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
82326	3.8S	62.1W	49	MS	71	0	0	24	1.5	4.4	4.6
82704	7.6S	72.7W	170	MS	69	0	0	1	1.8	-4.3	4.7
82825	8.8S	63.9W	95	MS	52	1	2	29	1.9	-6.9	7.2
82915	10.0S	67.8W	136	MS	72	0	0	13	1.9	-4.0	4.4
83214	10.3S	54.9W	285	MS	46	0	0	0	1.2	-6.9	7.0
83235	12.4S	46.4W	660	MS	80	1	1	0	0.9	6.7	6.8
83295	13.4S	39.9W	755	MS	49	0	0	98	0.7	-4.6	4.7
83319	14.7S	52.4W	315	MS	46	0	0	2	1.4	-5.4	5.6
83332	14.1S	46.4W	950	MS	81	28	35	0	0.8	13.8	13.8
83408	14.3S	43.8W	556	MS	77	0	0	0	0.9	10.7	10.7
83423	16.7S	49.3W	729	MS	82	0	0	0	1.1	-5.7	5.8
83488	17.8S	42.9W	1097	MS	83	83	100	0	0.0	0.0	0.0
83531	18.6S	46.5W	896	MS	60	1	2	2	1.1	-6.8	6.9

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83587	19.9S	43.9W	850	MS	81	1	1	0	1.0	-8.0	8.1
83689	21.3S	43.8W	1171	MS	73	0	0	0	0.9	4.4	4.5
83704	22.3S	53.9W	369	MS	74	2	3	4	4.3	-7.5	8.6
83773	23.1S	48.9W	793	S	42	0	0	2	1.6	-5.7	5.9
83836	25.5S	50.6W	837	MS	79	0	0	0	1.3	-4.4	4.6
83916	28.2S	51.5W	806	MS	80	1	1	1	1.9	-4.9	5.3
84401	5.2S	80.6W	55	MS	84	0	0	8	1.3	4.6	4.8
84425	5.9S	76.1W	184	MS	64	1	2	3	1.4	4.3	4.5
84455	6.5S	76.4W	282	MS	60	0	0	0	1.3	6.8	6.9
84472	7.1S	78.5W	2622	S	44	1	2	0	0.9	-6.1	6.2
84501	8.1S	79.0W	30	MS	86	0	0	1	1.2	4.7	4.9
84542	9.4S	77.6W	2760	S	29	0	0	3	2.8	4.9	5.6
84686	13.6S	72.0W	3249	S	103	0	0	0	1.8	-4.3	4.7
84782	18.1S	70.3W	469	MS	87	0	0	0	2.4	8.7	9.0
85141	14.5S	67.6W	202	MS	36	0	0	28	1.7	4.3	4.6
85394	22.8S	64.3W	381	MS	29	0	0	34	2.6	4.9	5.5
85406	18.3S	70.3W	58	M	111	0	0	3	2.5	6.1	6.6

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71094	66.7N	61.4W	722	MS	116	0	0	9	1.2	-4.1	4.3
76118	30.4N	109.7W	1040	MS	29	4	14	3	0.6	-11.2	11.2
76151	29.2N	118.3W	23	MS	21	0	0	0	0.7	4.2	4.3
76539	22.1N	101.0W	1870	MS	72	0	0	0	1.0	-4.2	4.3
76625	20.6N	100.4W	1813	MS	59	0	0	3	1.2	-7.9	8.0
76632	20.1N	98.7W	2417	MS	23	0	0	91	0.7	-5.3	5.3
76634	20.1N	98.4W	2135	MS	67	1	1	93	0.9	-5.1	5.2
76658	19.2N	103.7W	494	MS	28	0	0	0	1.2	5.9	6.0
76750	18.5N	88.3W	9	MS	81	0	0	2	1.8	-4.0	4.4
76762	17.5N	99.5W	1865	MS	74	74	100	0	0.0	0.0	0.0
78627	15.3N	91.5W	1901	S	53	2	4	0	1.9	4.2	4.6

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
91339	5.5N	153.8E	3	MS	54	0	0	28	3.0	-7.2	7.8
94955	41.6S	145.7E	684	MS	90	90	100	0	0.0	0.0	0.0

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
02045	67.8N	20.4E	408	M	111	111	100	0	0.0	0.0	0.0
11024	48.4N	15.4E	860	S8	115	2	2	0	1.0	-12.7	12.7
16020	46.5N	11.3E	1461	MS	105	105	100	0	0.0	0.0	0.0
16227	41.9N	13.6E	655	MS	117	117	100	0	0.0	0.0	0.0
16549	39.1N	8.3E	12	MS	117	0	0	1	1.1	-4.3	4.4
16614	40.4N	21.3E	604	MS	101	3	3	0	1.4	-7.4	7.5
40072	34.4N	40.9E	182	M	84	1	1	20	1.7	-7.9	8.1

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89108	89.0S	0.3W	2754	S	69	11	16	26	4.4	5.1	6.7
89264	71.4S	68.9W	780	S	48	2	4	10	3.5	5.0	6.1
89324	80.0S	120.0W	1530	S	70	4	6	33	6.0	-4.5	7.5
89332	82.6S	137.1W	549	S	69	3	4	23	6.8	-1.1	6.9
89345	89.7S	148.8W	620	S	21	14	67	100	3.4	-10.6	11.1
89606	78.5S	106.9E	3490	S7	115	4	3	0	6.5	2.7	7.0
89744	74.0S	43.0E	3353	S	66	1	2	20	3.2	6.0	6.8
89828	74.5S	123.0E	3280	S	68	4	6	0	4.9	4.2	6.5
89860	74.2S	160.3E	1772	M	64	1	2	14	4.1	-6.1	7.3

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :70.0 - 500.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

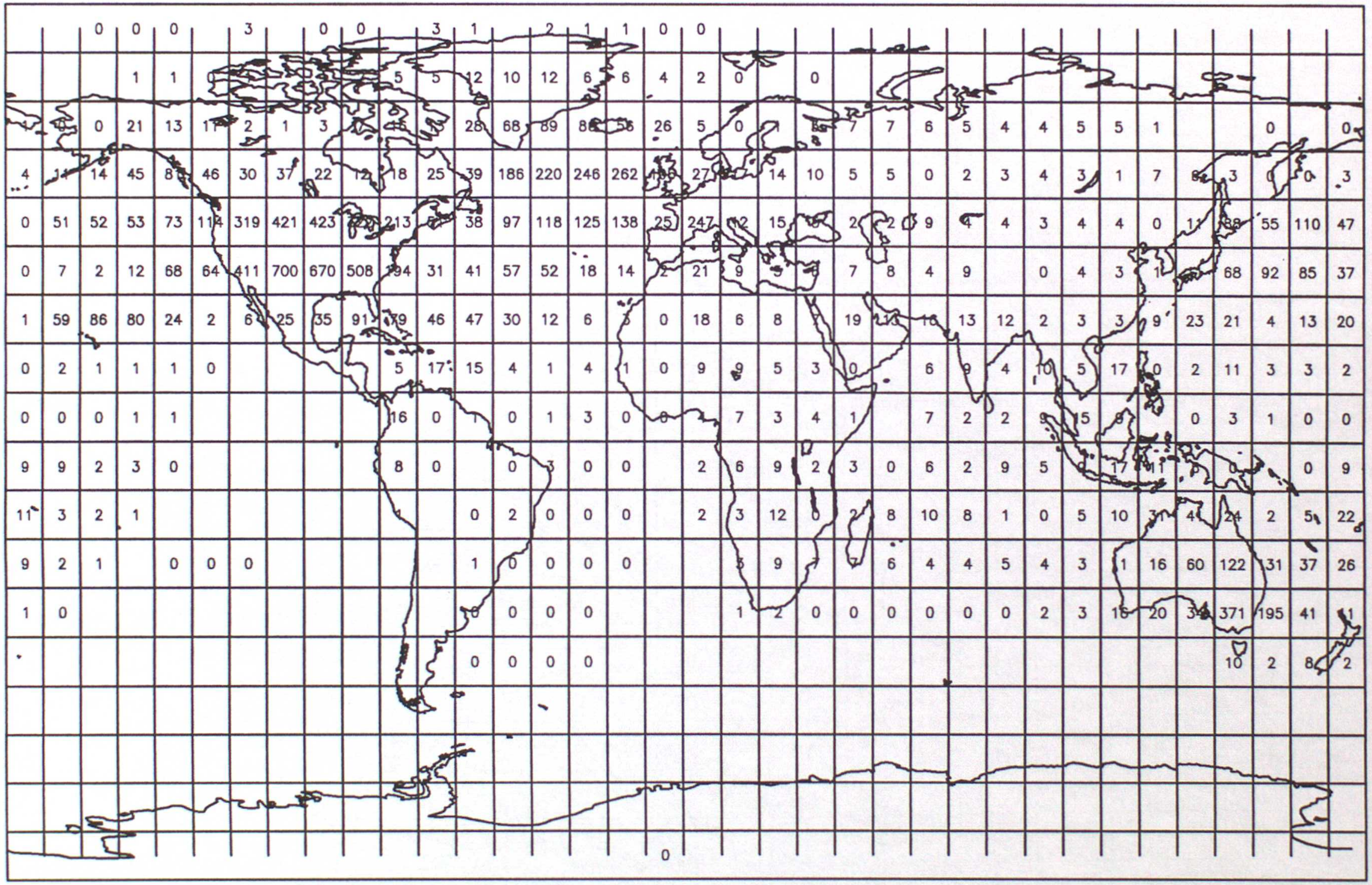
SELECTION CRITERIA :N REP $\geq$ 20

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	104	1	2	1.8	0.5	102	0	1	0	7.0	0.6
AAL	4968	0	1	1.7	0.2	4971	0	2	0	7.3	0.9
AAR	1882	1	2	1.8	-0.2	1826	0	3	0	9.0	0.8
ACA	2259	0	1	2.0	0.1	2301	0	2	1	6.6	0.9
ACI	46	0	0	1.5	0.7	46	0	0	0	8.0	0.9
AEA	633	0	3	3.0	1.6	621	0	3	0	9.1	0.8
AEL	325	0	3	1.8	-0.9	313	0	4	0	6.8	0.6
AEY	105	1	4	2.0	1.0	95	0	1	0	7.3	1.6
AFL	243	0	5	2.2	0.5	241	0	5	1	8.5	0.8
AFR	1679	1	7	1.9	0.2	1555	0	7	0	8.0	0.6
AIH	476	1	3	1.8	0.3	406	0	4	0	8.6	0.2
AJM	73	0	3	1.7	0.0	53	0	8	0	11.8	0.2
AMT	482	0	4	2.6	1.4	459	0	4	0	7.6	0.8
AMX	322	2	4	1.4	0.1	323	0	6	0	9.1	1.4
ANA	966	1	3	1.9	-0.2	955	0	4	0	9.0	0.9
ANQ	34	0	0	2.3	-0.5	34	0	0	0	12.4	-2.5
ANZ	2261	3	4	1.9	0.1	2183	0	3	1	8.3	1.0
AOM	699	2	4	2.0	1.2	548	0	3	0	7.5	0.9
ARP	120	0	5	2.4	0.9	99	0	4	1	10.6	2.4
ASY	25	4	4	1.6	1.0	26	0	4	0	6.0	-0.2
ATN	58	0	21	3.1	-1.9	58	0	100	0	20.0	3.5
AUA	48	0	0	1.3	-0.6	50	0	2	0	6.7	1.6
AVA	423	1	2	1.6	0.3	418	0	3	0	9.0	1.3
AVN	52	4	6	1.6	0.5	51	2	4	0	10.1	1.8
AXA	89	2	3	2.2	1.3	89	0	4	0	10.7	2.0
AZA	570	1	4	1.7	0.0	531	0	6	0	7.9	0.9
BAL	1096	0	8	1.5	-0.3	1049	0	10	0	7.7	0.6
BAW	1868	1	10	1.8	0.1	1823	0	11	0	7.6	0.9
BBB	37	0	8	1.6	0.3	35	0	6	0	7.3	0.0
BWA	277	2	73	2.6	1.8	265	0	5	0	9.9	1.1
CAL	1500	0	1	1.7	0.3	1493	0	3	0	8.8	0.4
CCA	138	3	30	2.6	0.6	121	1	100	0	12.7	0.4
CDN	2054	0	1	2.0	0.3	2025	0	2	0	8.2	0.6
CES	298	0	1	1.6	0.2	290	1	4	0	10.7	0.4
CFG	1215	0	2	1.8	-0.8	1194	0	4	1	8.1	0.5
CIT	26	0	23	1.3	-0.2	26	0	23	0	6.7	-1.4
CKS	230	1	3	1.6	0.5	214	0	1	0	5.6	0.6
CKT	298	0	5	2.3	1.0	288	0	3	0	8.8	0.7
CLX	314	0	3	1.9	-0.8	320	0	3	1	7.6	0.9
CMI	939	1	3	1.6	0.6	901	0	4	2	7.8	1.7
CMM	443	0	1	1.8	0.3	439	0	1	0	6.7	0.8
COA	999	1	3	1.6	0.4	989	0	4	0	7.9	0.8
CPA	43	0	0	1.6	-0.5	45	0	2	0	8.3	2.9
CRL	519	1	3	1.8	0.4	456	0	5	0	8.6	0.8
CSA	28	0	0	1.6	-1.2	29	0	7	0	7.9	3.2
CTB	231	0	0	1.7	0.2	230	0	2	0	8.2	1.5
CTM	65	2	8	1.9	-0.7	52	0	8	0	7.1	0.4
CUB	441	0	5	2.1	0.8	414	0	32	0	8.5	0.6
DAL	6062	1	2	1.9	0.5	6069	0	2	0	7.8	0.7
DHL	97	1	100	3.5	-1.9	96	0	5	2	10.0	0.4
DLH	3966	1	6	2.0	0.1	3963	0	9	3	7.5	1.0
DOA	43	0	0	1.3	-0.9	44	0	0	0	5.3	0.0
EIA	193	1	5	1.7	0.2	195	0	7	1	8.8	1.1
EIN	28	0	14	2.6	-1.2	25	0	12	0	9.7	1.4
ELY	137	1	7	1.5	0.2	141	0	8	0	8.9	0.8
EVA	866	1	2	1.8	-0.1	861	0	3	0	9.0	0.7
EWW	132	5	100	3.2	0.9	135	0	100	0	13.7	2.4
FDX	1004	1	3	1.7	0.6	1001	0	3	0	8.4	0.2
FIN	644	0	3	2.1	0.5	643	0	5	2	7.8	1.0

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FJI	448	6	6	1.9	0.9	423	0	3	0	9.6	0.1
FOM	123	2	3	1.8	-0.1	122	0	2	0	8.2	1.1
GAF	140	1	1	2.0	-0.2	143	0	3	1	9.0	0.6
GCO	20	5	15	2.4	1.6	21	0	5	0	8.5	0.3
GHA	41	0	2	1.8	0.6	35	0	3	0	8.4	0.7
GIA	159	3	4	1.6	0.7	135	0	2	1	6.8	1.5
GTI	24	0	4	2.8	1.4	26	0	8	0	15.2	-1.8
HAL	1558	1	3	1.5	0.4	1499	0	4	0	9.0	1.5
HLF	222	1	1	1.6	-0.7	226	0	2	0	8.2	0.9
HRH	56	4	7	1.5	0.9	55	0	5	0	9.9	0.3
IBE	2960	1	8	1.9	0.7	2948	0	8	0	8.4	0.8
ICE	680	0	1	1.9	0.0	676	0	1	0	6.7	0.7
JAL	5516	0	1	1.8	0.3	5483	0	2	0	8.3	0.7
JAZ	32	0	0	1.2	0.8	32	0	0	0	5.8	0.9
KAL	3049	1	2	1.9	-0.2	2984	0	3	0	9.6	0.7
KLM	3072	0	2	1.8	0.2	3037	0	3	0	8.0	1.1
LDA	210	0	4	1.4	-0.4	214	0	7	0	7.2	0.7
LDI	315	1	13	1.8	-0.8	320	0	13	0	7.5	0.7
LIB	341	0	2	1.8	0.9	331	1	5	0	8.1	1.5
LKR	66	0	0	1.1	0.7	66	2	2	0	5.5	-0.4
LOT	469	0	1	2.2	-1.1	469	0	1	0	7.0	0.5
LTU	829	1	3	1.6	0.1	826	0	4	0	7.5	0.9
MAS	267	0	1	2.0	-0.2	210	0	4	0	9.8	1.0
MDA	184	0	3	2.0	0.1	180	0	4	0	10.3	-0.4
MON	49	0	2	1.2	0.2	42	0	2	0	6.8	1.5
MPH	1170	1	2	1.9	-0.5	1161	0	3	0	7.6	0.9
NAT	23	0	0	1.3	-0.6	23	0	4	4	9.9	4.0
NCA	602	0	1	1.9	0.3	596	0	3	0	8.2	-0.1
NWA	9968	0	1	1.8	0.6	9910	0	2	0	8.2	0.9
PAC	144	1	6	2.5	1.0	136	0	2	0	8.7	1.4
PAI	33	0	3	2.3	0.2	32	0	9	3	15.5	1.1
PAL	1080	1	1	1.5	-0.3	1034	0	4	2	9.1	0.5
PAO	193	1	5	1.8	0.2	193	0	3	1	6.8	0.9
QFA	1342	2	4	1.9	0.3	1330	0	4	1	7.9	0.9
RAF	93	0	0	1.7	0.8	92	0	0	0	7.8	1.7
RAM	69	1	3	1.9	-0.1	64	0	3	0	9.0	0.4
RCH	316	2	96	2.9	1.4	313	0	96	0	10.5	2.6
RJA	95	1	5	2.7	0.7	95	0	2	0	8.0	-0.1
RKA	117	2	2	1.2	-0.4	72	0	0	0	7.0	1.6
ROY	132	0	5	1.6	-0.4	138	0	6	0	8.9	1.4
RRR	142	0	10	2.5	0.1	144	1	13	2	9.2	1.8
SAA	242	2	4	1.3	-0.4	217	0	4	0	7.4	0.9
SAB	48	2	4	1.8	-0.1	48	0	0	0	6.3	1.5
SAS	1256	0	1	2.0	0.2	1253	0	2	1	7.2	0.6
SCX	160	1	3	1.6	0.6	100	0	4	1	7.4	1.0
SIA	1135	0	1	1.9	-0.7	1089	0	2	0	8.3	0.6
SJM	57	0	5	3.6	-2.3	48	0	6	0	10.1	3.0
SLR	116	1	12	1.8	-0.6	108	0	15	0	8.5	0.8
SOL	44	2	2	1.4	1.0	44	0	5	2	9.1	0.6
SPP	374	2	6	2.5	1.0	363	0	4	0	9.0	0.5
SSV	57	0	0	1.7	-0.1	59	0	2	0	6.4	0.6
SVA	97	0	6	2.0	0.7	99	0	100	1	11.8	1.9
SVV	25	12	12	2.6	0.8	24	0	17	0	11.0	3.1
SWR	139	0	1	1.3	0.1	141	0	1	0	6.9	1.3
TAP	707	1	5	1.7	-0.2	688	0	6	0	8.8	1.2
THA	374	1	2	1.8	-0.7	355	0	1	0	9.1	0.3
THY	34	3	6	1.6	-0.5	34	0	32	0	15.6	2.2
TOW	145	0	2	1.6	-0.1	142	0	1	0	7.7	0.6
TPA	23	0	0	1.3	0.6	23	0	0	0	4.7	1.5

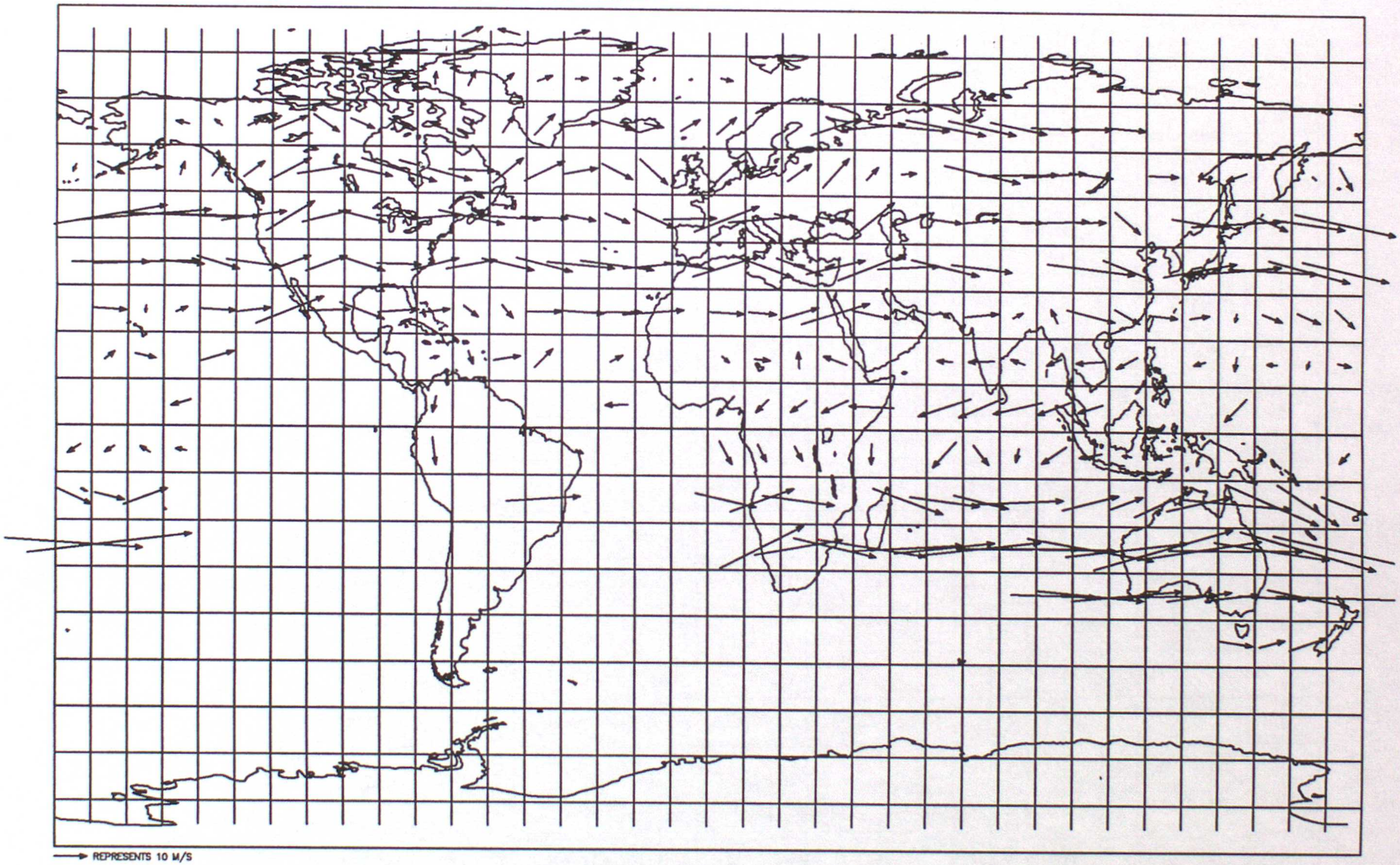
	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
TSC	210	0	3	1.6	0.4	220	0	3	0	7.2	1.2
TWA	1820	0	2	1.8	0.0	1801	0	3	0	7.8	1.2
UAL	10852	1	2	1.9	0.0	10738	0	2	0	7.8	0.9
ULE	335	1	2	1.6	0.4	343	0	1	0	6.7	0.5
UPS	644	0	5	1.7	0.0	643	0	6	0	7.7	0.4
USA	400	1	1	1.6	-0.1	397	0	2	0	6.9	1.2
VIR	182	0	2	1.9	-0.4	177	0	3	0	7.9	1.8
VKG	67	3	6	2.4	1.3	63	0	10	2	8.3	-0.1
VRG	55	5	4	2.3	0.6	49	0	2	0	10.2	1.4
VSP	115	1	1	1.9	0.6	109	0	3	0	10.0	0.6
WOA	57	4	5	2.9	1.8	64	2	8	0	9.7	0.9
YLC	24	0	4	1.0	-0.6	24	0	4	0	6.4	-0.8
AN	23777	0	1	1.4	0.1	23609	0	0	0	6.4	1.1
BA	21362	0	7	1.3	0.4	21288	0	7	0	7.1	1.5
DL	93315	0	3	1.2	0.1	93315	0	12	0	6.6	1.3
FJ	34	3	9	1.4	0.6	34	0	6	0	6.3	1.8
IT	501	0	1	1.1	0.0	501	0	1	0	6.9	0.7
KL	11335	0	7	1.3	0.5	11333	0	7	0	6.5	1.2
LH	3680	0	1	1.6	0.2	3651	0	2	0	7.2	1.4
MK	4304	0	0	1.2	0.7	4284	0	1	0	7.8	2.0
NW	35584	0	2	1.3	0.1	35584	0	2	0	6.5	1.1
QF	4508	1	1	1.4	0.4	4508	0	1	0	6.3	1.2
SA	1676	0	1	1.4	0.8	1676	0	1	0	8.0	2.0
SV	1961	0	1	1.2	0.7	1952	0	0	0	6.5	1.4
A	28	0	0	1.4	0.5	27	0	0	0	5.1	1.6
C	25	0	4	1.1	0.4	25	0	4	0	8.7	0.0
D	20	0	0	1.6	0.9	20	0	0	0	5.1	1.8
J	22	0	0	1.0	0.2	22	0	0	0	7.6	0.4
N	1168	1	45	1.8	0.6	1155	0	6	0	7.6	1.3
S	21	0	0	1.8	0.4	21	0	0	0	6.4	2.2
W	28	0	4	0.8	0.0	28	0	4	0	6.0	1.4
Y	22	0	0	0.9	0.3	22	0	0	0	8.1	-0.3

MEAN DAILY COUNT OF AIRCRAFT 70 – 500 HPA FIGURE 3
JUNE 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

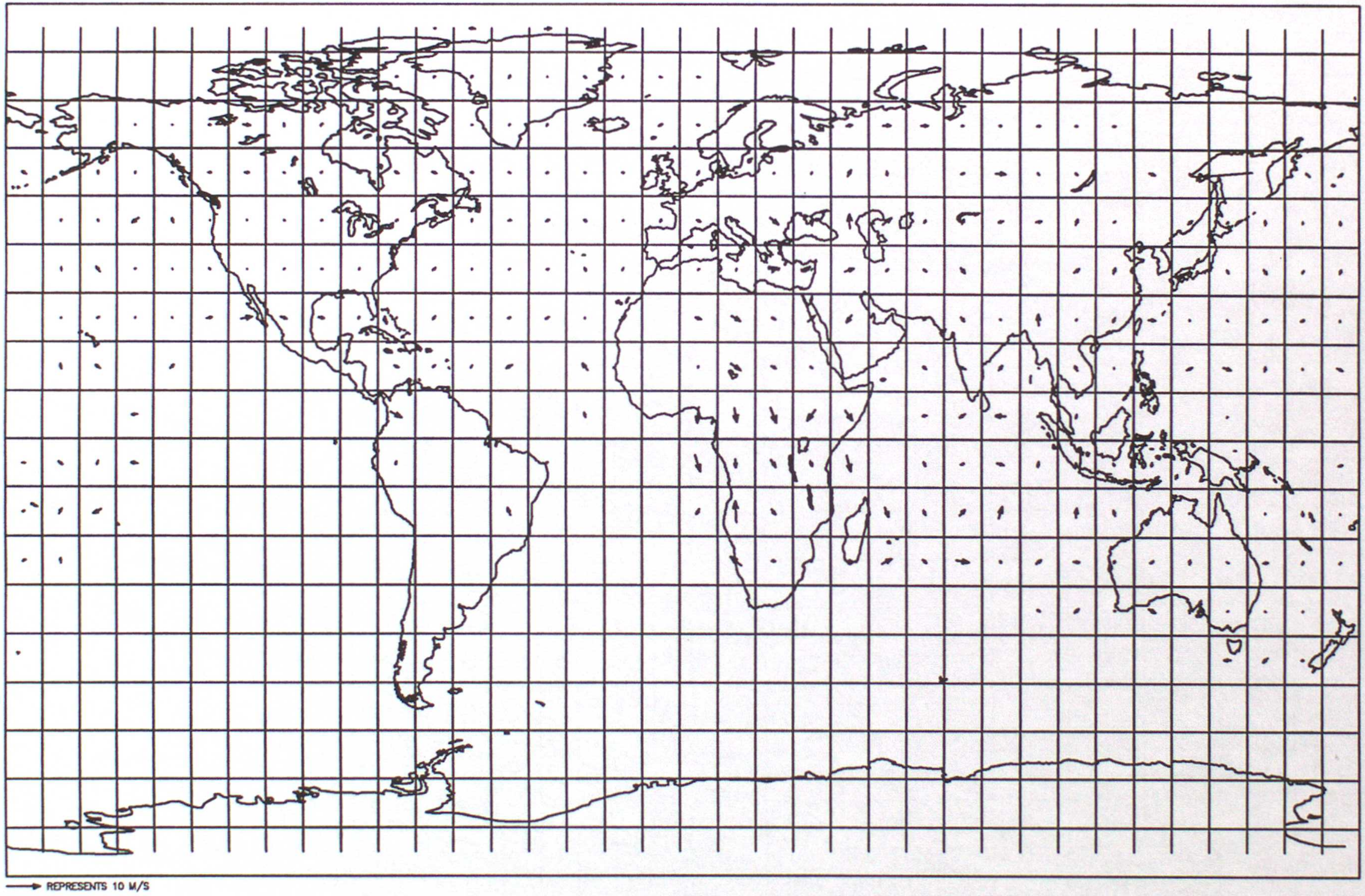

0 0 0 3 0 0 3 1 2 1 1 0 0
1 1 5 5 12 10 12 6 6 4 2 0 0
0 21 13 2 1 3 28 68 89 26 5 0 7 7 6 5 4 4 5 5 1 0 0
4 14 45 46 30 37 22 18 25 39 186 220 246 262 27 14 10 5 5 0 2 3 4 3 1 7 3 3
0 51 52 53 73 114 319 421 423 213 38 97 118 125 138 25 247 15 2 2 9 4 4 3 4 4 0 55 110 47
0 7 2 12 68 64 411 700 670 508 194 31 41 57 52 18 14 21 9 7 8 4 9 0 4 3 68 92 85 37
1 59 86 80 24 2 6 25 35 91 46 47 30 12 6 0 18 6 8 19 13 12 2 3 3 9 23 21 4 13 20
0 2 1 1 1 0 5 17 15 4 1 4 1 0 9 9 5 3 0 6 9 4 10 5 17 0 2 11 3 3 2
0 0 0 1 1 16 0 0 1 3 0 7 3 4 1 7 2 2 15 0 3 1 0 0
9 9 2 3 0 8 0 0 3 0 0 2 6 9 2 3 0 6 2 9 5 17 11 0 9
11 3 2 1 0 2 0 0 0 2 3 12 8 10 8 1 0 5 10 2 5 22
9 2 1 0 0 0 1 0 0 0 0 9 6 4 4 5 4 3 16 60 122 37 26
1 0 0 0 0 1 2 0 0 0 0 0 0 2 3 20 371 195 41
0 0 0 0 10 2 8 2
0

AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA
JUNE 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

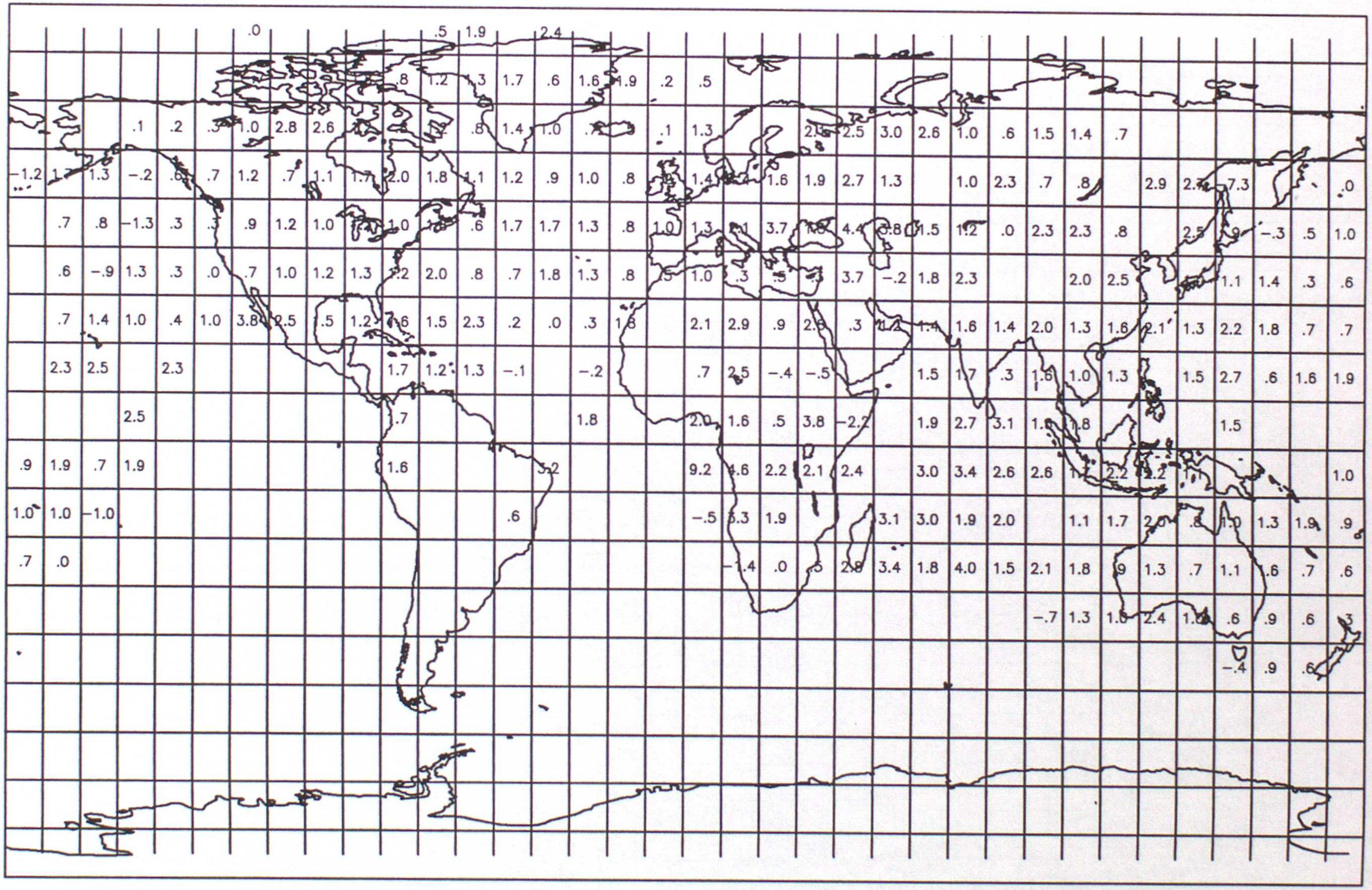
FIGURE 4



AIRCRAFT MEAN O–B WINDS BETWEEN 70 AND 500 HPA FIGURE 5
JUNE 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O–B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
JUNE 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


.0 .5 1.9 2.4
.8 1.2 1.3 1.7 .6 1.6 1.9 .2 .5
.1 .2 .3 1.0 2.8 2.6 .8 1.4 1.0 .1 1.3 2.5 3.0 2.6 1.0 .6 1.5 1.4 .7
-1.2 1.3 -.2 .7 1.2 .7 1.1 2.0 1.8 1.1 1.2 .9 1.0 .8 1.4 1.6 1.9 2.7 1.3 1.0 2.3 .7 .8 2.9 7.3 .0
.7 .8 -1.3 .3 .9 1.2 1.0 1.0 .6 1.7 1.7 1.3 .8 1.0 1.3 3.7 4.4 1.5 1.2 .0 2.3 2.3 .8 2.5 -.3 .5 1.0
.6 -.9 1.3 .3 .0 .7 1.0 1.2 1.3 2.0 .8 .7 1.8 1.3 .8 1.0 .3 .5 3.7 -.2 1.8 2.3 2.0 2.5 1.1 1.4 .3 .6
.7 1.4 1.0 .4 1.0 3.8 2.5 .5 1.2 1.5 2.3 .2 .0 .3 2.1 2.9 .9 .3 1.6 1.4 2.0 1.3 1.6 2.1 1.3 2.2 1.8 .7 .7
2.3 2.5 2.3 1.7 1.2 1.3 -.1 -.2 .7 2.5 -.4 -.5 1.5 1.7 .3 1.6 1.0 1.3 1.5 2.7 .6 1.6 1.9
2.5 .7 1.8 2.0 1.6 .5 3.8 -2.2 1.9 2.7 3.1 1.8 1.5
.9 1.9 .7 1.9 1.6 3.2 9.2 4.6 2.2 2.1 2.4 3.0 3.4 2.6 2.6 2.2 2.2 1.0
1.0 1.0 -1.0 .6 -.5 3.3 1.9 3.1 3.0 1.9 2.0 1.1 1.7 2.0 .8 1.0 1.3 1.9 .9
.7 .0 -1.4 .0 2.8 3.4 1.8 4.0 1.5 2.1 1.8 .9 1.3 .7 1.1 .6 .7 .6
-.7 1.3 1.6 2.4 .6 .9 .6 .3
-.4 .9 .6

AIRCRAFT : RMS O-B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
JUNE 1997
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

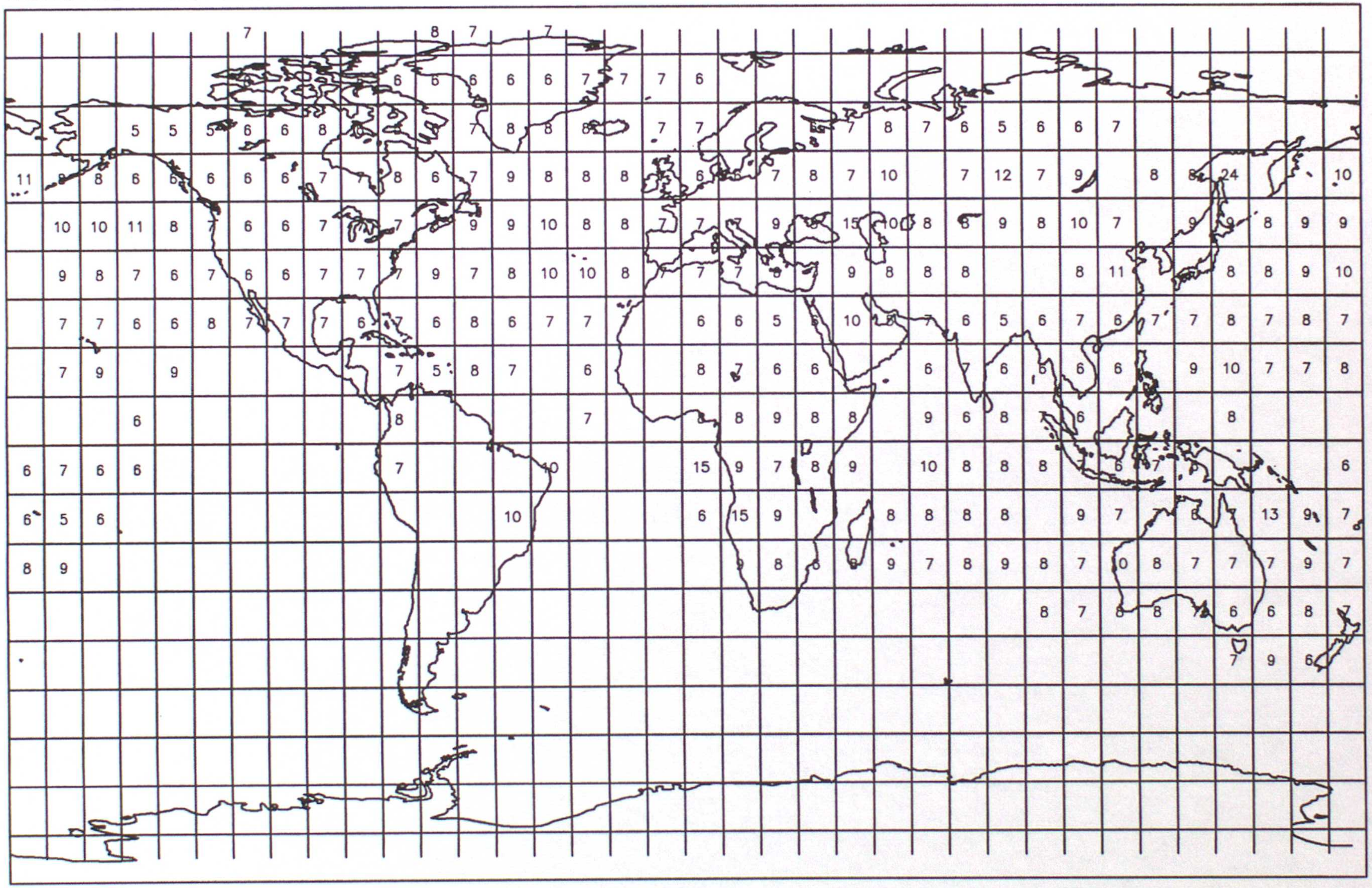

7 8 7 7
6 6 6 6 6 7 7 7 6
5 5 5 6 6 8 10 8 7 8 8 8 7 7 7 8 7 6 5 6 6 7
11 8 8 6 6 6 6 6 7 7 8 6 7 9 8 8 8 6 7 8 7 10 7 12 7 9 8 8 24 10
10 10 11 8 7 6 6 7 7 9 9 10 8 8 7 7 7 9 9 15 10 8 8 9 8 10 7 9 9 8 9 9
9 8 7 6 7 6 6 7 7 7 9 7 8 10 10 8 7 7 8 9 8 8 8 8 11 8 8 9 10
7 7 6 6 8 7 7 7 6 7 6 8 6 7 7 6 6 5 5 10 8 7 6 5 6 7 6 7 7 8 7 8 7
7 9 9 7 5 8 7 6 8 7 6 6 6 7 6 5 6 6 9 10 7 7 8
6 8 7 8 8 9 8 8 9 6 8 7 6 8
6 7 6 6 7 10 15 9 7 8 9 10 8 8 8 7 6 7 6
6 5 6 10 6 15 9 8 8 8 8 9 7 7 8 7 13 9 7
8 9 9 8 8 8 9 7 8 9 8 7 10 8 7 7 7 9 7
8 7 8 8 7 6 6 8 7
7 9 6

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

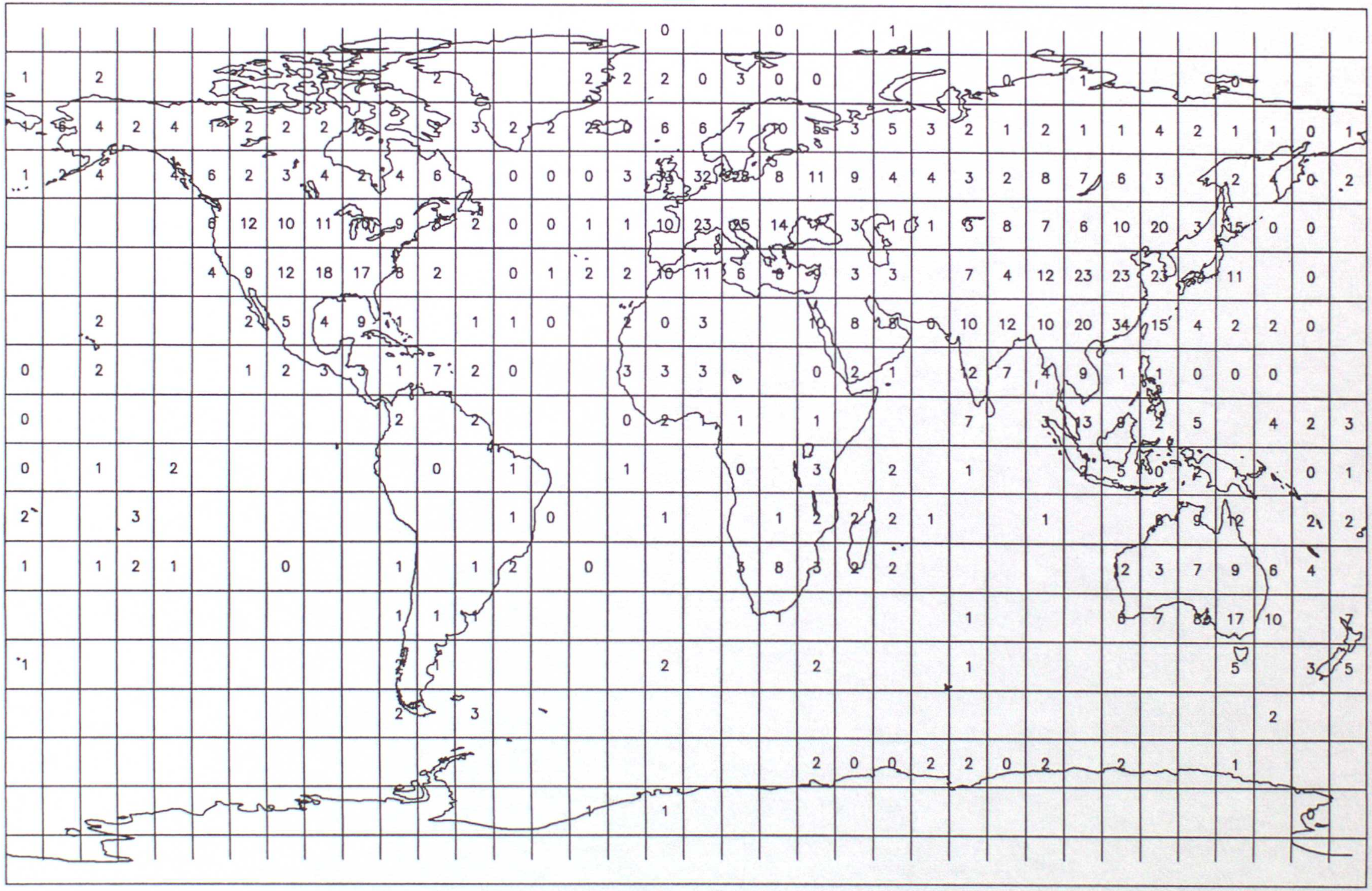
WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
17351	00	Z	50	37/ 35	11	0	153.6	196.5	249.4	7
33791	12	Z	30	48/ 33	10	0	43.6	252.1	255.8	5
37018	00	Z	30	44/ 39	11	0	36.6	191.5	195.0	8
37985	00	Z	250	39/ 49	15	0	102.3	32.1	107.3	6
42027	00	Z	100	34/ 75	16	0	134.7	-56.6	146.1	7
42101	12	Z	150	30/ 76	17	1	94.9	74.7	120.8	7
42314	00	Z	100	27/ 95	14	0	113.2	38.1	119.5	4
42339	12	Z	150	26/ 73	16	0	84.1	104.1	133.8	6
42361	00	Z	30	26/ 78	9	1	127.0	205.3	241.5	4
42361	12	Z	30	26/ 78	11	0	132.4	225.3	261.3	6
42369	00	Z	30	27/ 81	9	1	152.3	238.0	282.5	8
42369	12	Z	150	27/ 81	18	1	113.6	29.6	117.4	9
42379	00	Z	30	27/ 83	14	3	91.5	237.6	254.6	6
42379	12	Z	30	27/ 83	14	1	142.8	243.1	282.0	9
42492	00	Z	30	26/ 85	15	1	132.9	172.1	217.4	5
42492	12	Z	30	26/ 85	12	0	117.1	183.8	218.0	6
42647	12	Z	150	23/ 73	13	0	85.6	110.0	139.4	5
42667	00	Z	100	23/ 77	20	0	110.7	14.6	111.7	7
42667	12	Z	70	23/ 77	9	1	149.2	31.9	152.6	4
42867	00	Z	30	21/ 79	9	3	159.6	180.0	240.5	10
42867	12	Z	100	21/ 79	14	2	118.4	81.1	143.6	8
43003	12	Z	70	19/ 73	9	1	119.9	119.6	169.4	5
43128	00	Z	150	17/ 78	19	0	105.8	-3.4	105.9	4
43128	12	Z	50	17/ 78	11	0	125.8	112.2	168.5	4
43185	12	Z	50	16/ 81	13	0	64.7	151.5	164.7	5
43279	00	Z	100	13/ 80	26	0	106.8	-22.9	109.2	5
43285	00	Z	70	13/ 75	18	1	97.0	-161.2	188.1	9
43295	12	Z	150	13/ 78	19	0	74.2	99.1	123.8	5
43333	12	Z	100	12/ 93	13	0	116.1	-7.5	116.4	4
43369	00	Z	100	8/ 73	18	0	114.1	-2.1	114.1	4
43369	12	Z	30	8/ 73	14	0	140.1	203.6	247.1	6
43371	00	Z	50	8/ 77	17	1	84.1	-243.0	257.1	8
44212	12	Z	100	50/ 92	14	0	113.5	76.4	136.9	4
50527	12	Z	70	49/ 120	27	0	66.3	123.0	139.7	4
52836	12	Z	100	36/ 98	26	0	63.0	109.5	126.3	4
53772	00	Z	200	38/ 113	30	0	29.4	80.1	85.3	5
53772	12	Z	100	38/ 113	28	0	32.8	101.2	106.4	4
54161	00	Z	200	44/ 125	28	0	37.5	84.7	92.6	8
54161	12	Z	70	44/ 125	25	0	75.5	131.4	151.6	7
54497	00	Z	150	40/ 124	27	0	46.2	90.1	101.2	7
56294	00	Z	100	31/ 104	23	0	38.1	109.4	115.9	4
57494	00	Z	100	31/ 114	27	0	29.6	113.7	117.5	4
57972	00	Z	100	26/ 113	30	0	40.9	139.7	145.6	4
59280	00	Z	100	24/ 113	26	0	29.8	131.2	134.6	4
60490	12	Z	250	36/ -1	5	12	34.4	-183.0	186.2	4
62414	00	Z	50	24/ 33	19	1	140.6	156.8	210.6	5
62414	12	Z	150	24/ 33	24	2	80.1	100.1	128.2	6
63450	12	Z	700	9/ 39	24	0	15.2	52.3	54.5	6
72376	12	Z	70	35/-112	18	0	146.8	77.8	166.1	4
89009	00	Z	200	-90/ 0	11	0	74.7	77.7	107.8	5
89022	12	Z	500	-75/ -27	22	4	51.8	-16.9	54.5	5
91557	12	Z	700	-18/ 168	12	9	11.1	-84.3	85.1	8

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – JUNE 1997 FIGURE 8

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1331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1 6 4 2 4 1 2 2 2 3 2 2 23 0 6 6 7 10 55 3 5 3 2 1 2 1 1 4 2 1 1 0 1
1 2 4 4 6 2 3 4 2 4 6 0 0 0 3 33 32 28 8 11 9 4 4 3 2 8 7 6 3 4 2 4 0 2
6 12 10 11 10 9 2 0 0 1 1 10 23 25 14 7 3 1 1 3 8 7 6 10 20 3 15 0 0
4 9 12 18 17 8 2 0 1 2 2 10 11 6 8 9 3 3 7 4 12 23 23 23 11 0
2 2 5 4 9 1 1 1 0 2 0 3 10 8 8 0 10 12 10 20 34 15 4 2 2 0
0 2 1 2 3 3 1 7 2 0 3 3 3 0 2 1 12 7 4 9 1 1 0 0 0
0 2 2 0 2 1 1 7 3 13 9 2 5 4 2 3
0 1 2 0 1 1 0 3 2 1 5 0 2 0 1
2 3 1 0 1 1 2 2 2 1 1 8 9 12 2 2
1 1 2 1 0 1 1 2 0 3 8 3 2 2 12 3 7 9 6 4
1 1 1 1 1 6 7 8 17 10 7
1 1 2 2 1 5 3 5
2 3 2
2 0 0 2 2 0 2 2 1
1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
83612	00	V	200	-20/ -55	11	0	18	0.9	1.0	17.6	1
83612	12	V	200	-20/ -55	11	0	18	6.7	-0.4	19.0	1

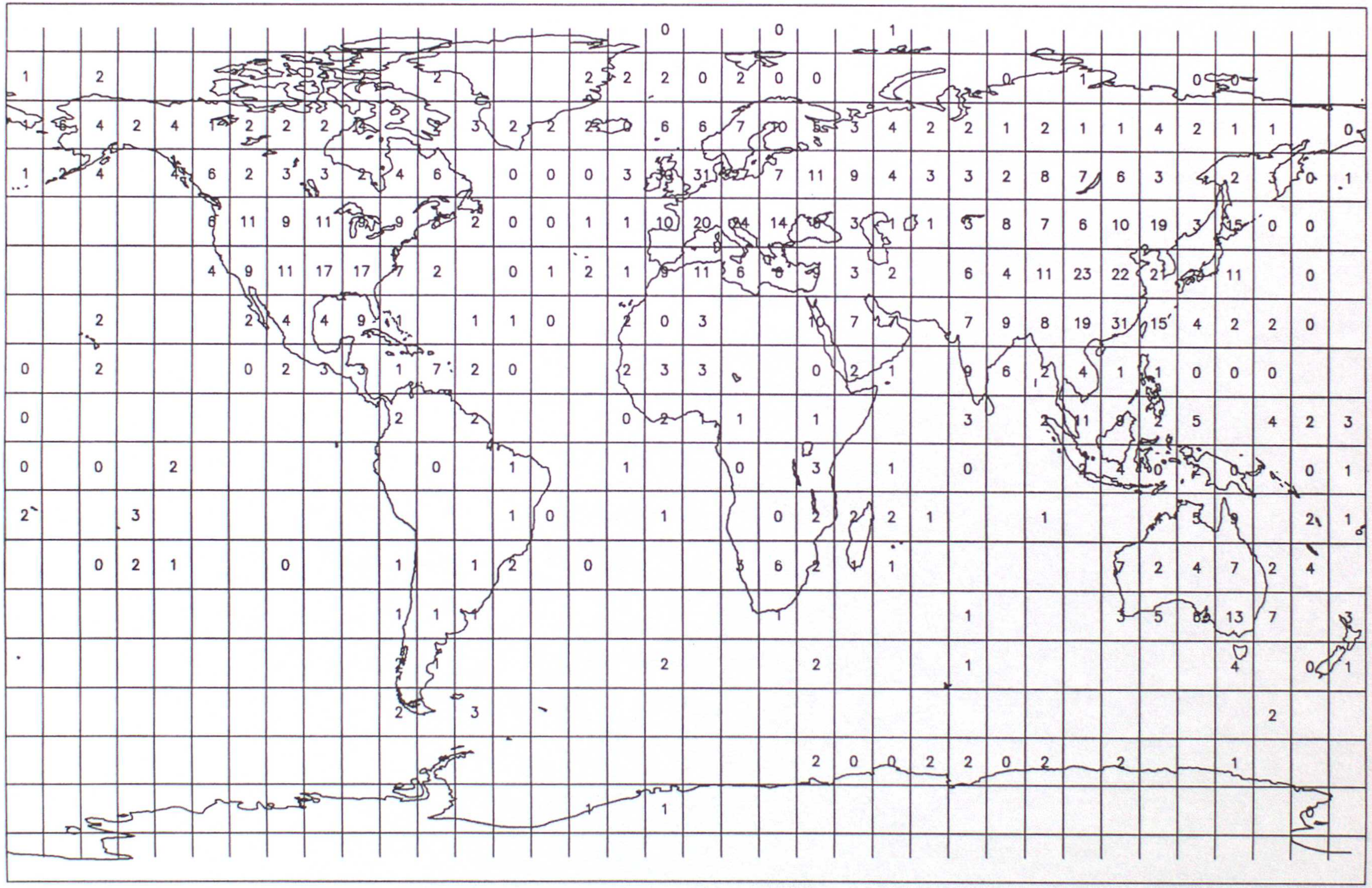
AVAILABILITY – TEMP/PILOT – 300 HPA WIND – JUNE 1997

FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1197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1 2 4 4 6 2 3 3 2 4 6 0 0 0 3 33 31 27 7 11 9 4 3 3 2 8 7 6 3 2 2 3 0 1
6 11 9 11 19 9 2 0 0 1 1 10 20 24 14 16 3 1 1 3 8 7 6 10 19 3 15 0 0
4 9 11 17 17 7 2 0 1 2 1 9 11 6 8 9 3 2 6 4 11 23 22 21 20 11 0
2 2 4 4 9 1 1 1 0 2 0 3 10 7 7 7 9 8 19 31 15 4 2 2 0
0 2 0 2 3 3 1 7 2 0 2 3 3 0 2 1 9 6 2 4 1 1 0 0 0
0 2 2 0 2 1 1 1 3 2 11 9 2 5 4 2 3
0 0 2 0 1 1 0 3 1 0 2 4 0 2 0 0 1
2 3 1 0 1 1 0 2 2 2 1 1 4 5 9 2 1
0 2 1 0 1 1 2 0 3 6 2 1 1 7 2 4 7 2 4
1 1 1 1 1 3 5 8 13 7 3
2 1 2 2 1 4 0 1
2 3 2
2 0 0 2 2 0 2 2 1
1 1 0

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
JCCX	12	DD	32/ 130	10	13.1	6.8	19.4
SHIP	00	DD	56/ -8	7	11.4	5.6	19.7
10828	12	DD	48/ 9	6	-10.2	9.7	19.2
11520	12	DD	50/ 14	26	-14.6	7.9	26.7
12843	12	DD	47/ 19	26	-10.1	4.9	18.6
16144	12	DD	45/ 12	23	16.8	4.2	18.9
26422	00	DD	57/ 24	20	-10.8	6.2	24.6
41114	00	DD	18/ 43	12	12.4	8.1	21.4
42339	12	DD	26/ 73	13	19.0	9.9	28.2
42647	12	DD	23/ 73	5	13.4	4.9	18.8
48568	00	DD	7/ 101	16	25.0	4.3	16.2
57679	00	DD	28/ 113	26	13.7	6.2	18.9
58362	00	DD	31/ 121	28	-10.1	4.2	13.2
58847	12	DD	26/ 119	18	11.0	6.0	18.8
59134	00	DD	24/ 118	25	20.3	7.7	19.7
59134	12	DD	24/ 118	21	13.9	5.1	20.7
59280	00	DD	24/ 113	23	14.1	3.1	20.6
59280	12	DD	24/ 113	20	13.6	4.1	19.1
60490	12	DD	36/ -1	19	-11.5	2.8	10.9
60571	00	DD	32/ -2	23	12.1	3.7	16.8
60571	12	DD	32/ -2	23	10.1	5.1	16.4
67083	00	DD	-19/ 47	21	14.6	4.2	15.4
71917	00	DD	80/ -86	19	10.4	9.5	19.7
72476	00	DD	39/-109	25	-13.7	7.7	14.5
72476	12	DD	39/-109	27	-15.8	4.4	11.6
76644	12	DD	21/ -90	8	-15.8	5.7	18.9
96163	00	DD	-1/ 100	10	24.4	5.1	18.3
96315	00	DD	5/ 115	22	10.2	7.2	21.7
97180	00	DD	-5/ 120	18	-13.3	8.9	24.8

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: June, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES, METEOSAT, GMS, INSAT.

Standard of comparison :Background field from Bracknell global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

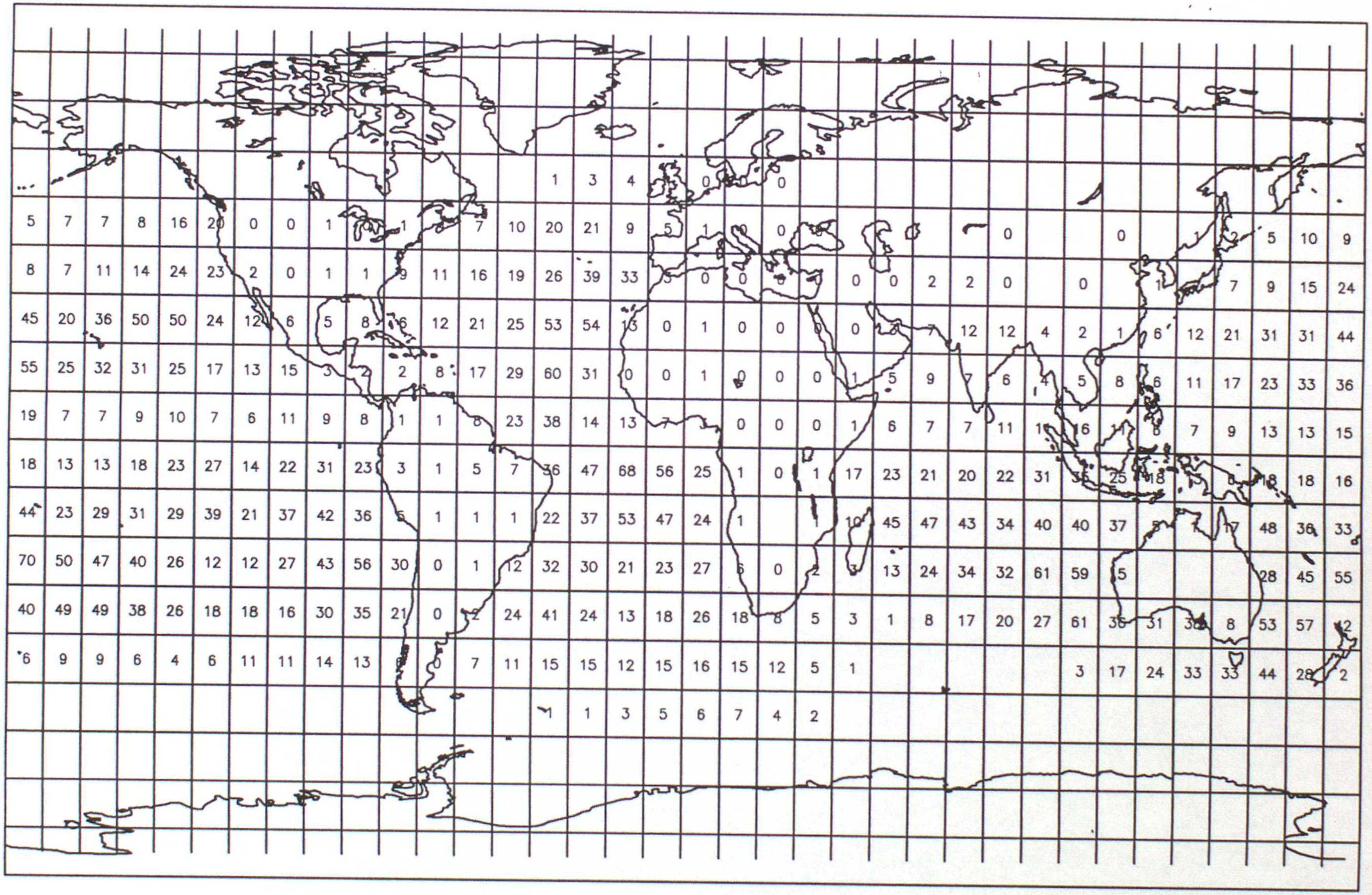
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
JUNE 1997


1 3 4 0 0
5 7 7 8 16 20 0 0 1 1 7 10 20 21 9 5 1 0 0 0 0 1 2 5 10 9
8 7 11 14 24 23 2 0 1 1 9 11 16 19 26 39 33 5 0 0 0 0 0 0 2 2 0 0 1 7 9 15 24
45 20 36 50 50 24 12 6 5 8 6 12 21 25 53 54 13 0 1 0 0 0 0 3 7 12 12 4 2 1 6 12 21 31 31 44
55 25 32 31 25 17 13 15 3 2 2 8 17 29 60 31 0 0 1 0 0 0 1 5 9 7 6 4 5 8 6 11 17 23 33 36
19 7 7 9 10 7 6 11 9 8 1 1 8 23 38 14 13 7 3 0 0 0 1 6 7 7 11 11 16 11 8 7 9 13 13 15
18 13 13 18 23 27 14 22 31 23 3 1 5 7 36 47 68 56 25 1 0 1 17 23 21 20 22 31 35 25 18 13 8 18 18 16
44 23 29 31 29 39 21 37 42 36 5 1 1 1 22 37 53 47 24 1 1 10 45 47 43 34 40 40 37 5 7 17 48 36 33
70 50 47 40 26 12 12 27 43 56 30 0 1 12 32 30 21 23 27 6 0 2 3 13 24 34 32 61 59 5 28 45 55
40 49 49 38 26 18 18 16 30 35 21 0 2 24 41 24 13 18 26 18 8 5 3 1 8 17 20 27 61 35 31 36 8 53 57 12
6 9 9 6 4 6 11 11 14 13 6 0 7 11 15 15 12 15 16 15 12 5 1 3 17 24 33 33 44 28 2
1 1 3 5 6 7 4 2

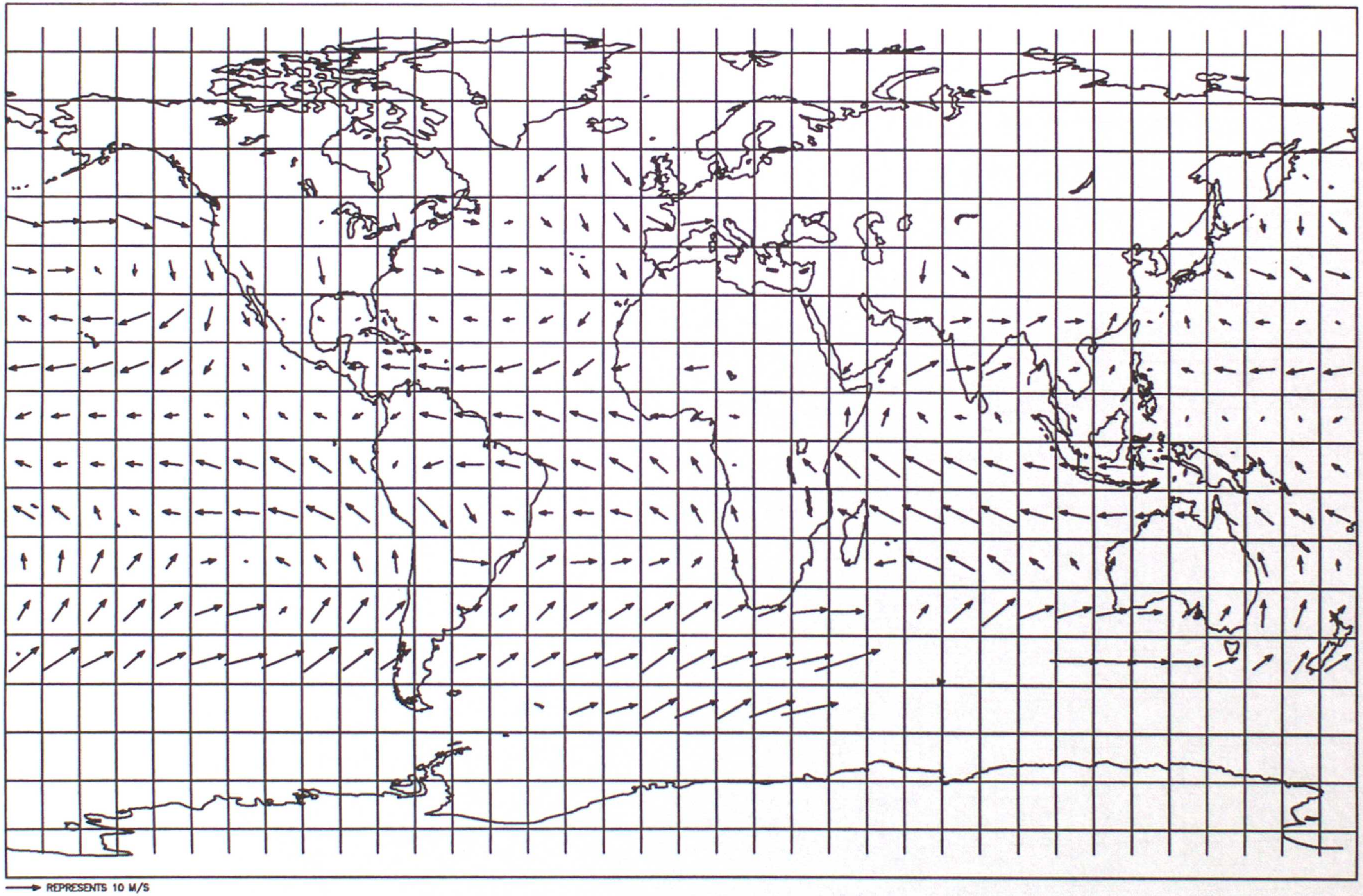
SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA

FIGURE 11

JUNE 1997

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 10 M/S

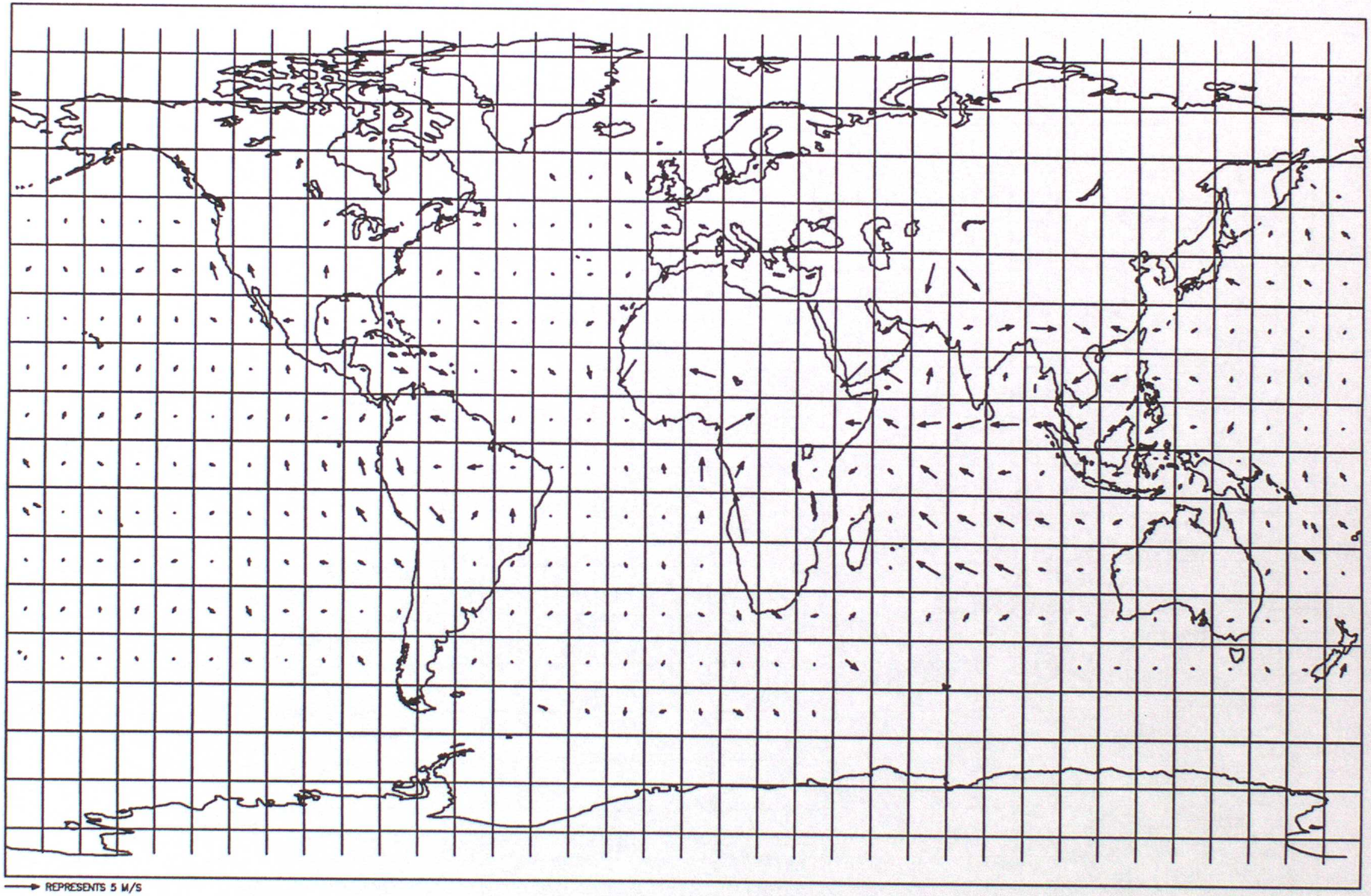
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701-1000 HPA

JUNE 1997

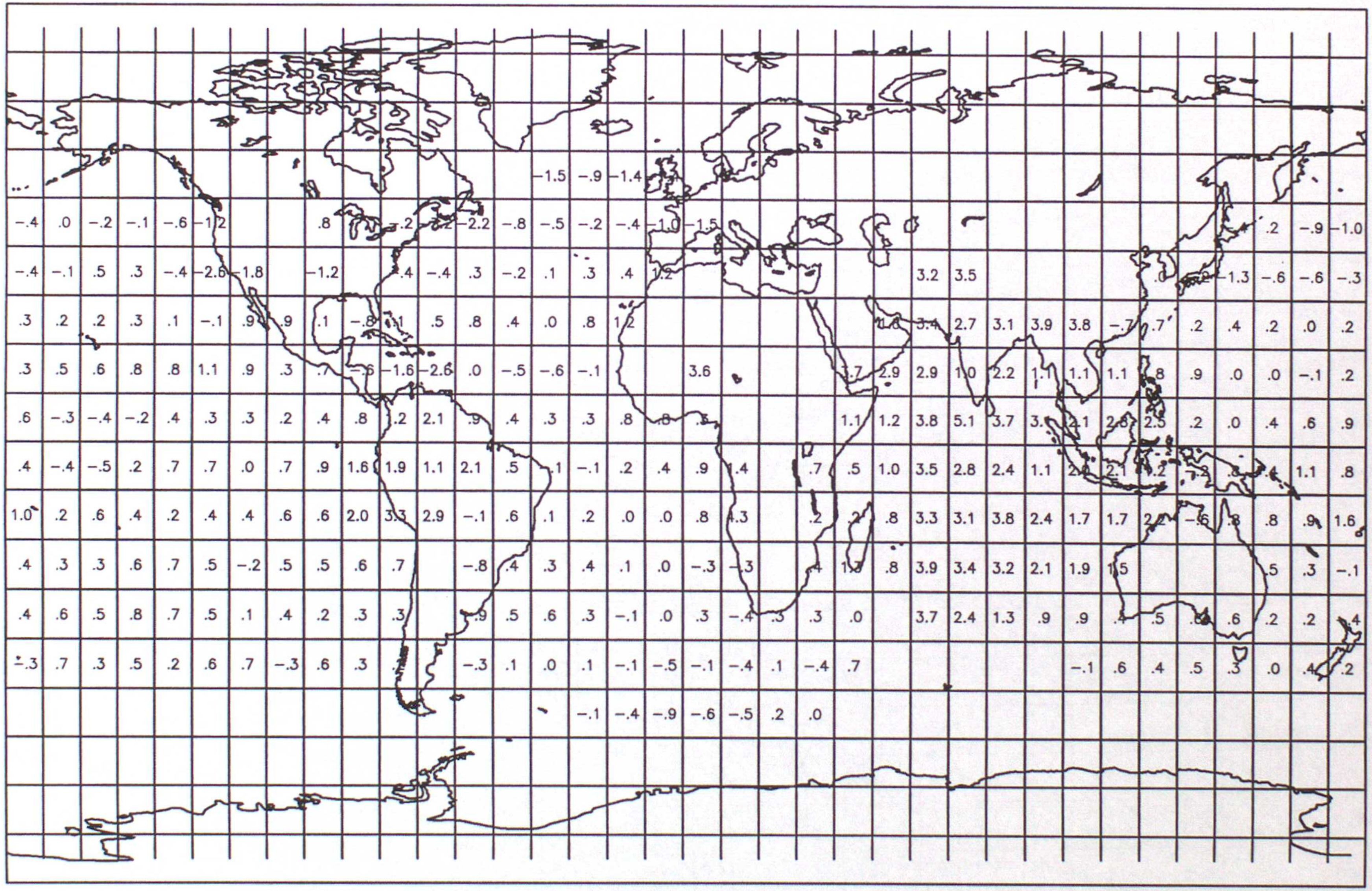
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 12


REPRESENTS 5 M/S

SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
JUNE 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

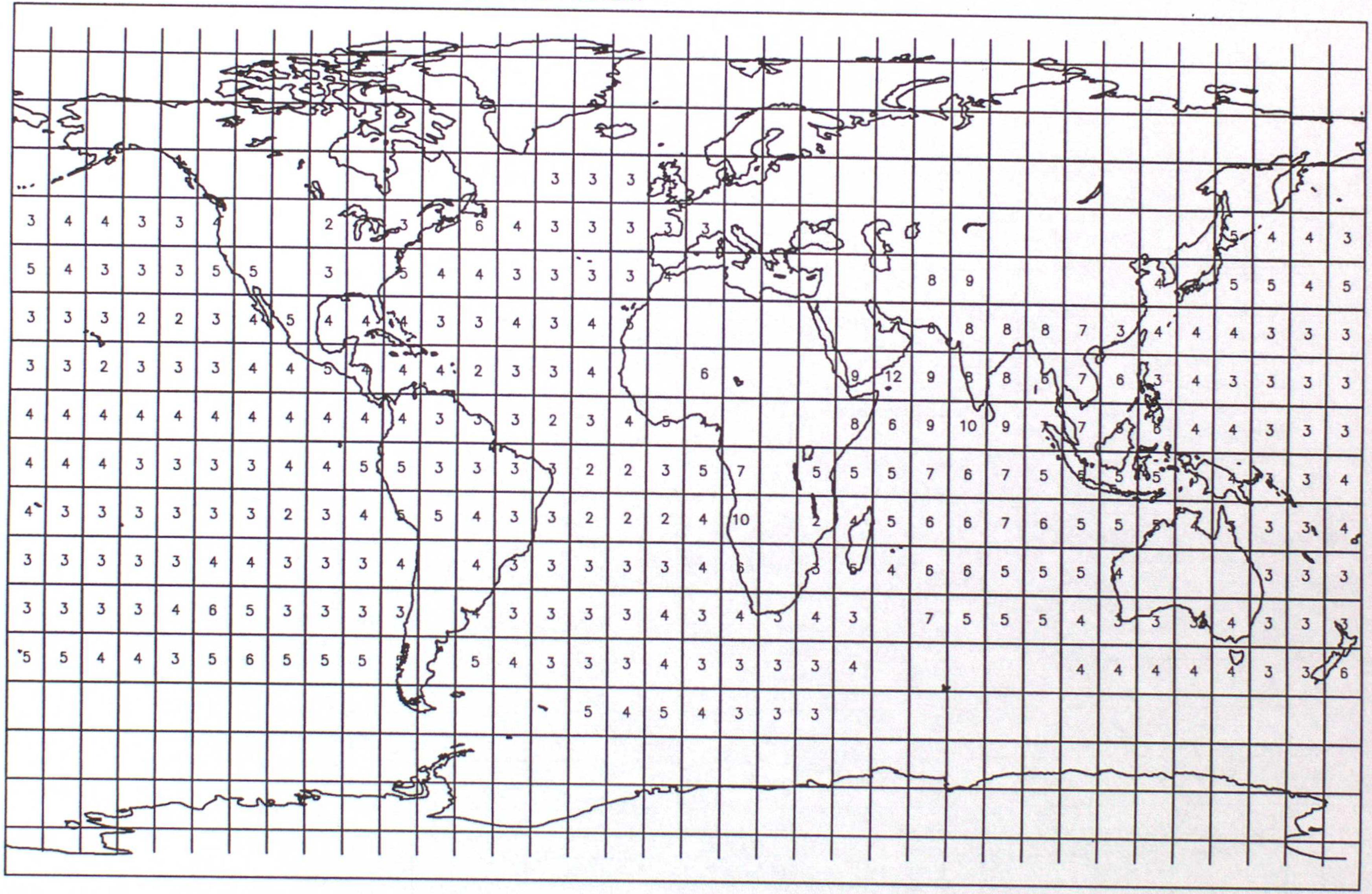

-1.5 -.9 -1.4
-.4 .0 -.2 -.1 -.6 -1.2 .8 -.2 -2.2 -2.2 -.8 -.5 -.2 -.4 -1.0 -1.5 .2 -.9 -1.0
-.4 -.1 .5 .3 -.4 -2.6 -1.8 -1.2 .4 -.4 .3 -.2 .1 .3 .4 1.2 3.2 3.5 .0 .2 -1.3 -.6 -.6 -.3
.3 .2 .2 .3 .1 -.1 .9 .9 .1 -.8 .1 .5 .8 .4 .0 .8 1.2 1.6 3.4 2.7 3.1 3.9 3.8 -.7 .7 .2 .4 .2 .0 .2
.3 .5 .6 .8 .8 1.1 .9 .3 .7 -.6 -1.6 -2.6 .0 -.5 -.6 -.1 3.6 1.7 2.9 2.9 1.0 2.2 1.1 1.1 1.1 .8 .9 .0 .0 -.1 .2
.6 -.3 -.4 -.2 .4 .3 .3 .2 .4 .8 1.2 2.1 .9 .4 .3 .3 .8 .8 .5 1.1 1.2 3.8 5.1 3.7 3. 2.1 2.8 2.5 .2 .0 .4 .6 .9
.4 -.4 -.5 .2 .7 .7 .0 .7 .9 1.6 1.9 1.1 2.1 .5 .1 -.1 .2 .4 .9 1.4 .7 .5 1.0 3.5 2.8 2.4 1.1 2.0 2.1 .2 .2 .8 .4 1.1 .8
1.0 .2 .6 .4 .2 .4 .4 .6 .6 2.0 3.3 2.9 -.1 .6 .1 .2 .0 .0 .8 1.3 .2 .2 .8 3.3 3.1 3.8 2.4 1.7 1.7 2.2 -.6 .8 .8 .9 1.6
.4 .3 .3 .6 .7 .5 -.2 .5 .5 .6 .7 -.8 .4 .3 .4 .1 .0 -.3 -.3 .4 1.3 .8 3.9 3.4 3.2 2.1 1.9 1.5 .5 .3 -.1
.4 .6 .5 .8 .7 .5 .1 .4 .2 .3 .3 .9 .5 .6 .3 -.1 .0 .3 -.4 .3 .3 .0 3.7 2.4 1.3 .9 .9 .4 .5 .6 .6 .2 .2 .4
-.3 .7 .3 .5 .2 .6 .7 -.3 .6 .3 -.3 .1 .0 .1 -.1 -.5 -.1 -.4 .1 -.4 .7 -.1 .6 .4 .5 .3 .0 .4 .2
-.1 -.4 -.9 -.6 -.5 .2 .0

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14

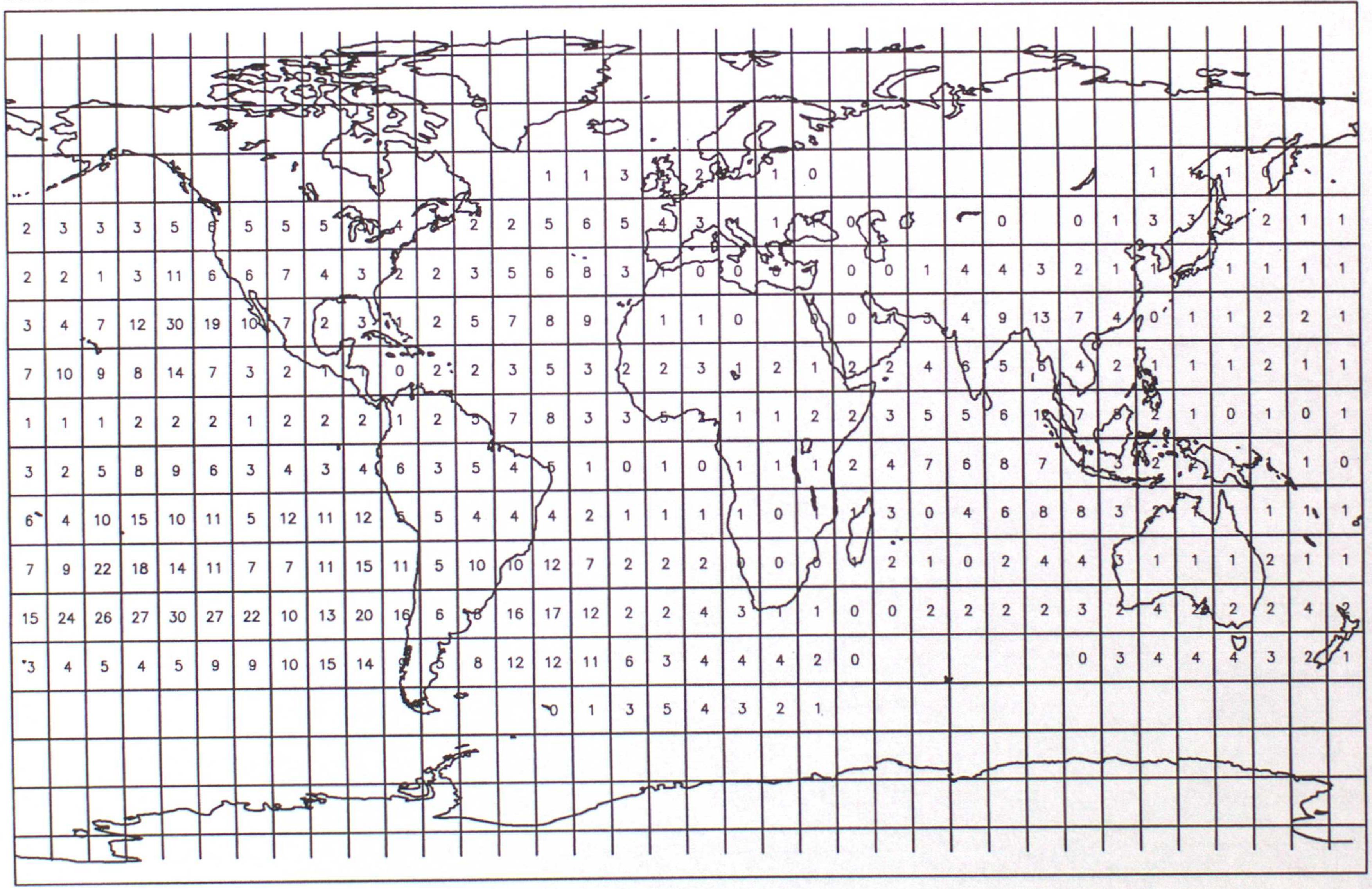
JUNE 1997

USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

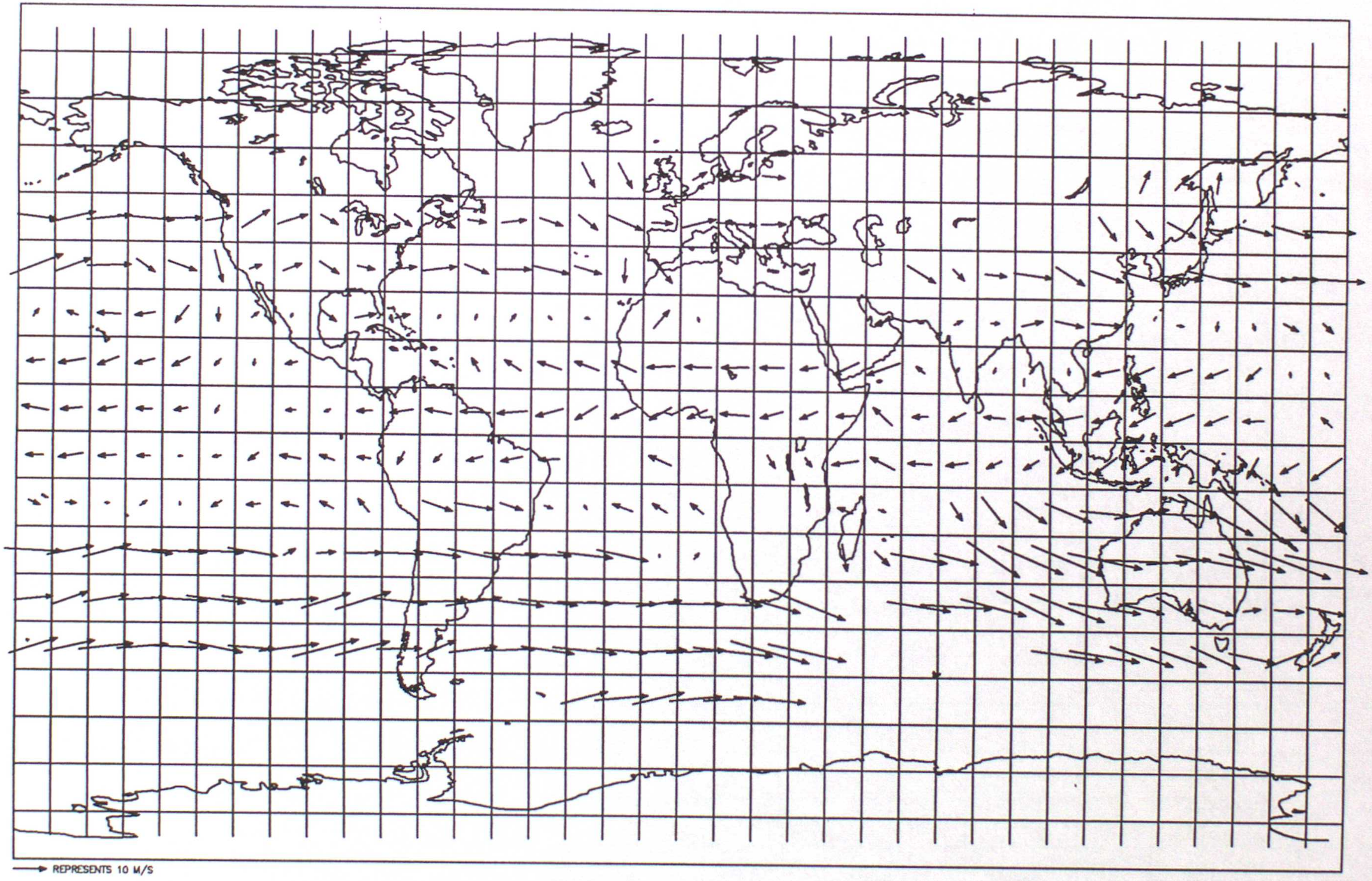

3 3 3
3 4 4 3 3 4 2 3 6 4 3 3 3 3 3 5 4 4 3
5 4 3 3 3 5 5 3 5 4 4 3 3 3 3 4 8 9 4 5 5 4 5
3 3 3 2 2 3 4 5 4 4 4 3 3 4 3 4 5 8 8 8 8 7 3 4 4 4 3 3 3
3 3 2 3 3 3 4 4 5 4 4 4 2 3 3 4 6 9 12 9 8 8 6 7 6 3 4 3 3 3 3
4 4 4 4 4 4 4 4 4 4 4 3 3 3 2 3 4 5 8 6 9 10 9 7 7 8 6 4 4 3 3 3
4 4 4 3 3 3 3 4 4 5 5 3 3 3 3 2 2 3 5 7 5 5 5 7 6 7 5 6 5 5 4 3 3 4
4 3 3 3 3 3 3 2 3 4 5 5 4 3 3 2 2 2 4 10 2 4 5 6 6 7 6 5 5 5 4 3 3 3 4
3 3 3 3 3 4 4 3 3 3 4 4 3 3 3 3 3 4 6 3 5 4 6 6 5 5 5 4 3 3 3
3 3 3 3 4 6 5 3 3 3 3 4 3 3 3 3 4 3 4 3 4 3 7 5 5 5 4 3 3 3 4 3 3 3
5 5 4 4 3 5 6 5 5 5 5 5 4 3 3 3 4 3 3 3 3 4 4 4 4 4 4 3 3 6
5 4 5 4 3 3 3

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
JUNE 1997


1 1 3 2 1 0 1 1 1 0
2 3 3 3 5 6 5 5 5 5 4 2 2 5 6 5 4 3 4 1 1 0 0 0 1 3 3 2 2 1 1
2 2 1 3 11 6 6 7 4 3 2 2 3 5 6 8 3 1 0 0 0 1 0 0 1 4 4 3 2 1 1 1 1 1 1
3 4 7 12 30 19 10 7 2 3 1 2 5 7 8 9 1 1 1 0 0 0 1 3 4 9 13 7 4 0 1 1 2 2 1
7 10 9 8 14 7 3 2 1 1 0 2 2 3 5 3 2 2 3 1 2 1 2 2 4 6 5 6 4 2 1 1 1 2 1 1
1 1 1 2 2 2 1 2 2 2 1 2 5 7 8 3 3 5 2 1 1 2 2 3 5 5 6 10 7 8 2 1 0 1 0 1
3 2 5 8 9 6 3 4 3 4 6 3 5 4 5 1 0 1 0 1 0 1 1 1 2 4 7 6 8 7 4 3 2 2 1 1 0
6 4 10 15 10 11 5 12 11 12 5 5 4 4 4 2 1 1 1 1 1 0 1 1 3 0 4 6 8 8 3 2 1 1 1 1
7 9 22 18 14 11 7 7 11 15 11 5 10 10 12 7 2 2 2 0 0 0 1 2 1 0 2 4 4 3 1 1 1 2 1 1
15 24 26 27 30 27 22 10 13 20 16 6 8 16 17 12 2 2 4 3 1 1 0 0 2 2 2 2 3 2 4 2 2 2 4 2
3 4 5 4 5 9 9 10 15 14 9 5 8 12 12 11 6 3 4 4 4 2 0 0 3 4 4 4 3 2 1
0 1 3 5 4 3 2 1

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
JUNE 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16


REPRESENTS 10 M/S

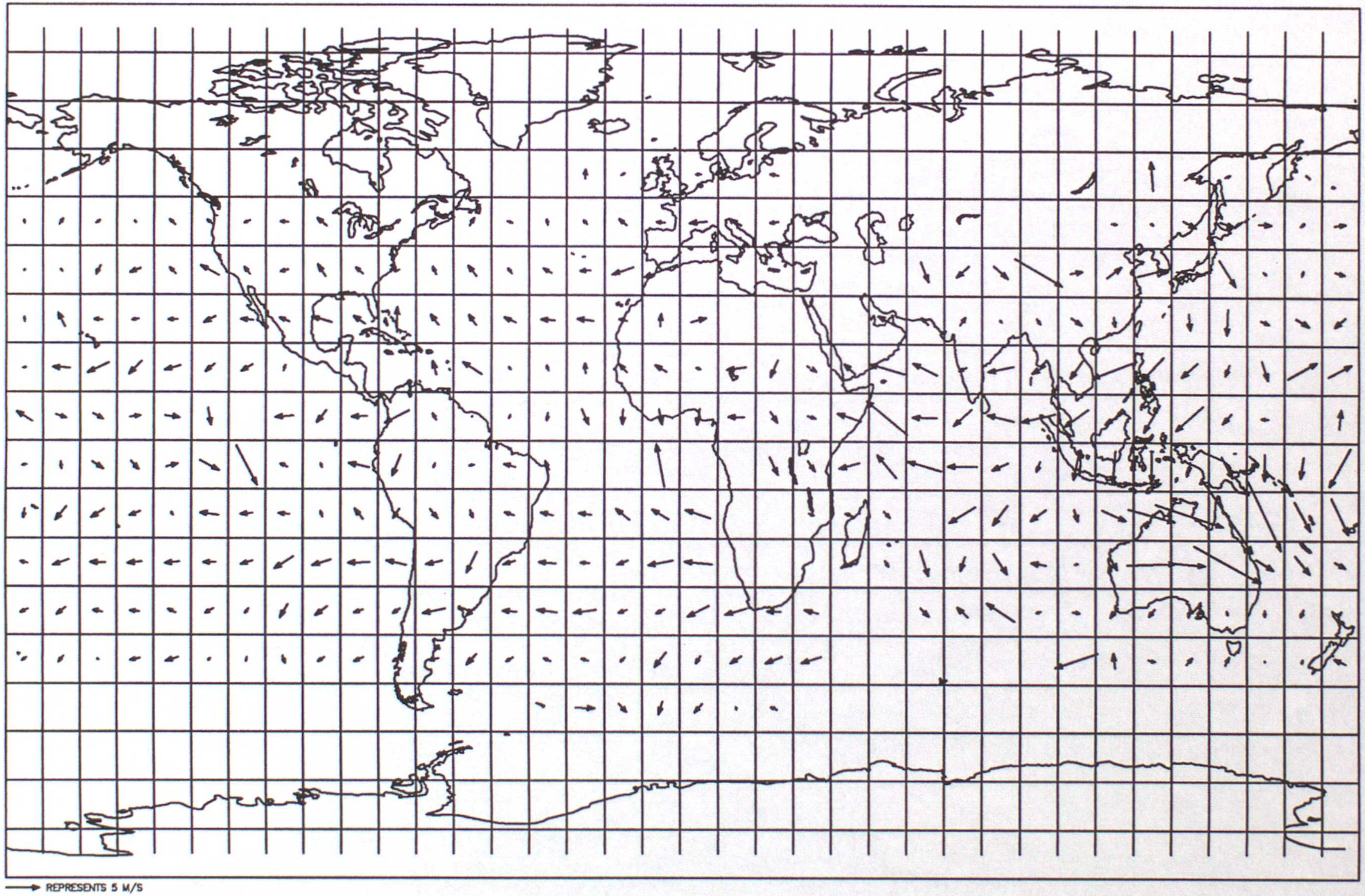
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 401–700 HPA

FIGURE 17

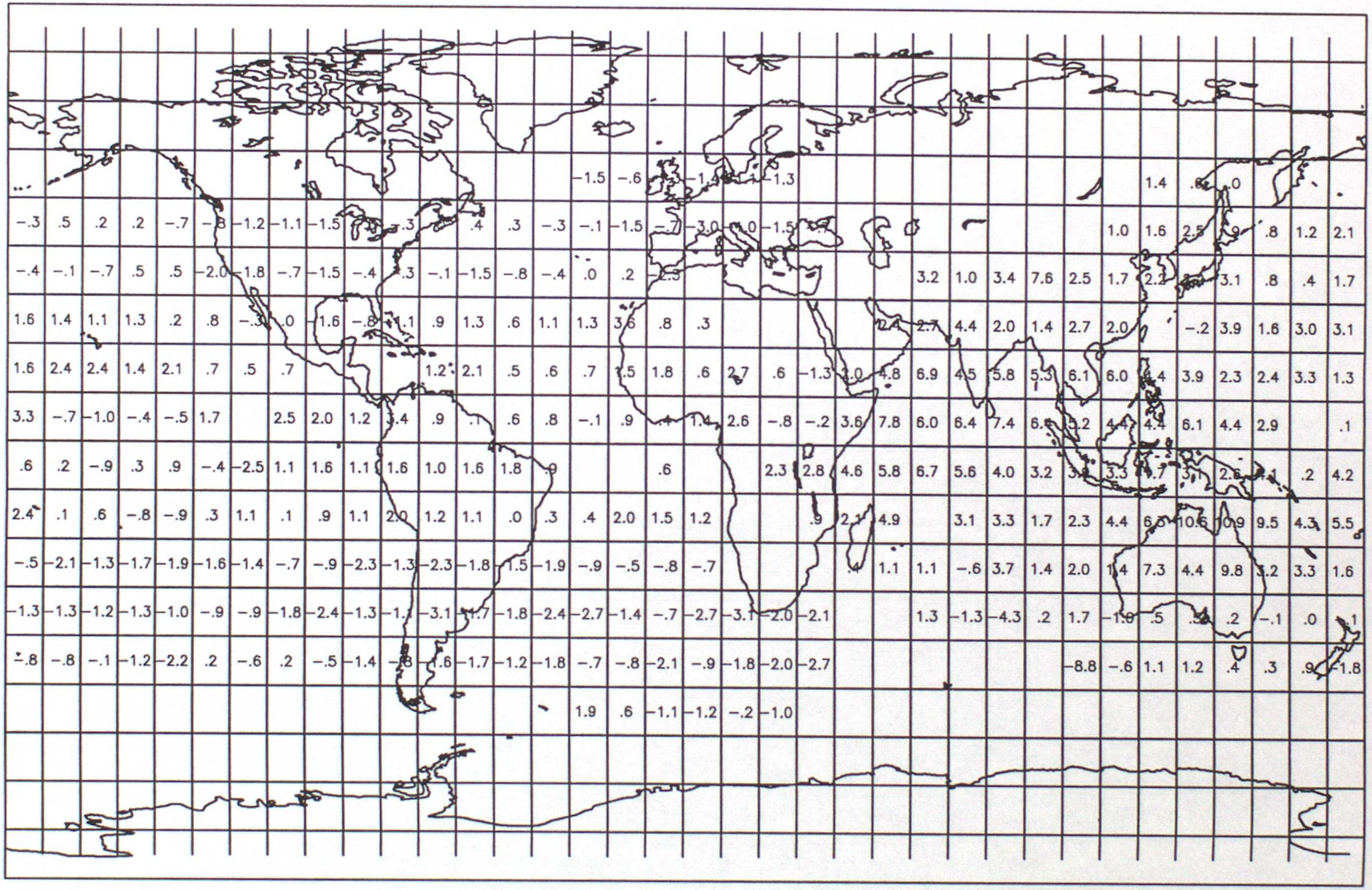
JUNE 1997

ALL OBSERVATIONS

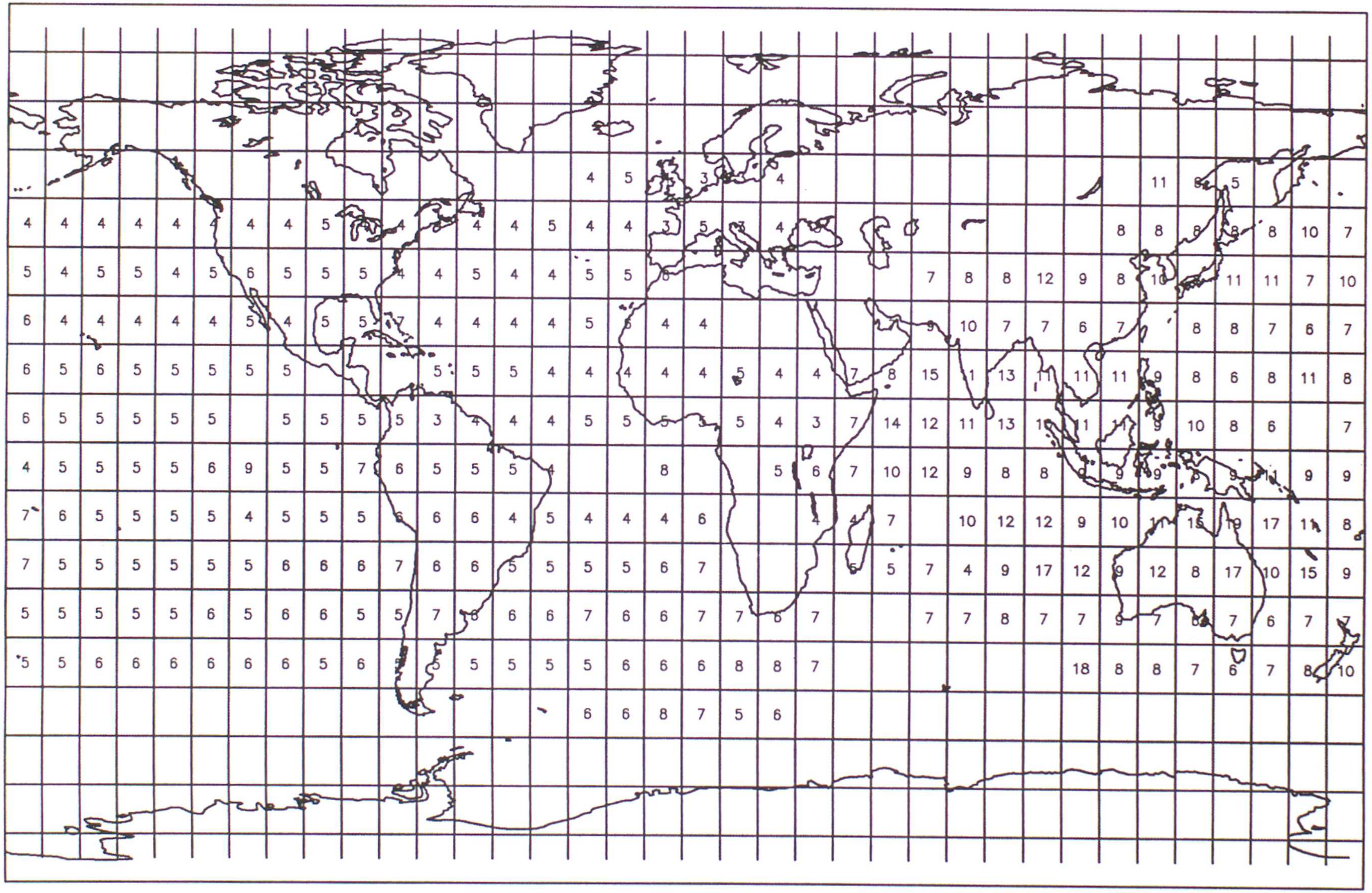
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 5 M/S

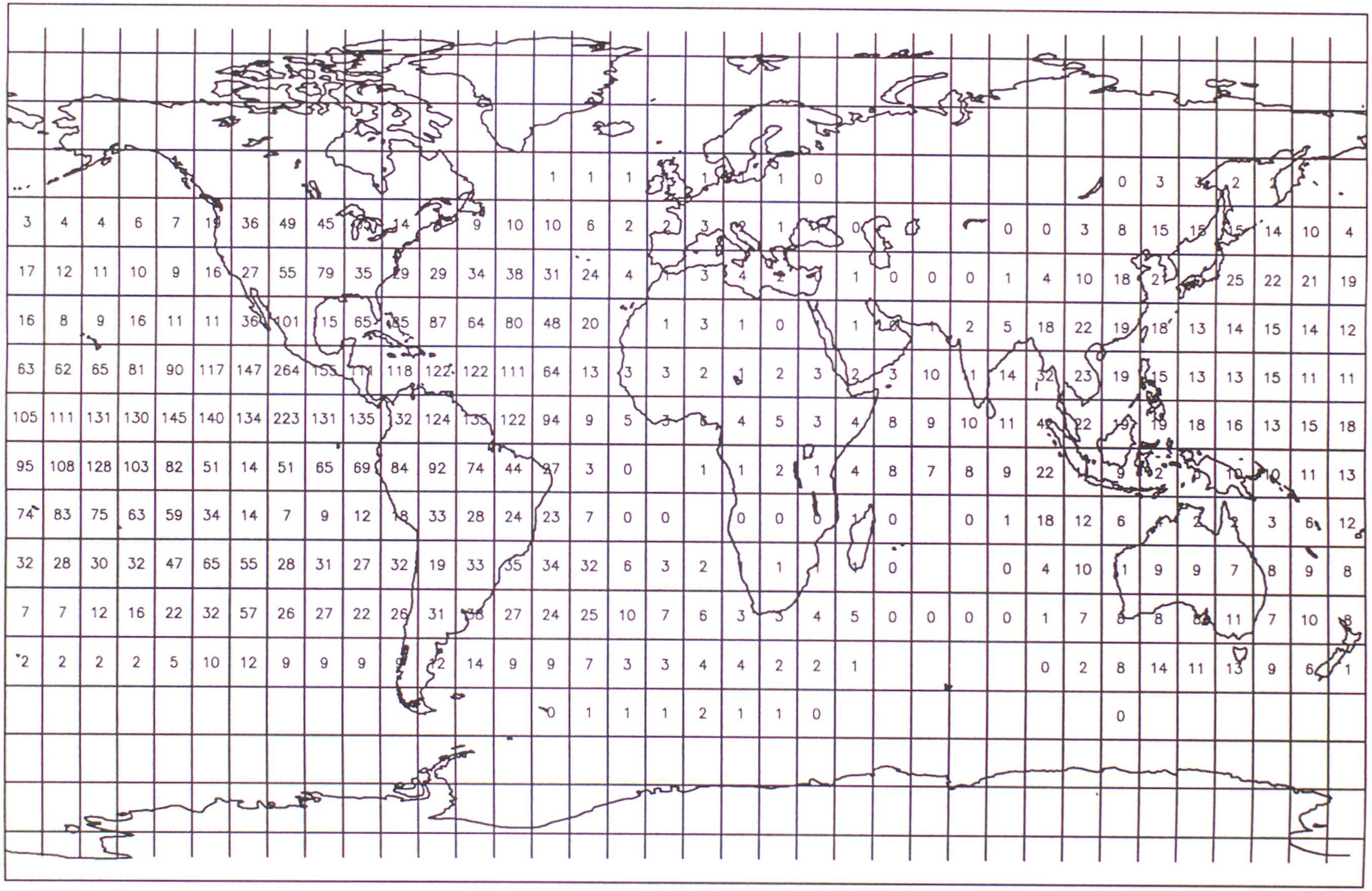
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
JUNE 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-1.5 -.6 -1.4 -1 -1.3 1.4 .6 .0
-.3 .5 .2 .2 -.7 -.8 -1.2 -1.1 -1.5 -.3 .4 .3 -.3 -.1 -1.5 -.7 -3.0 -1.0 -1.5 1.0 1.6 2.5 .9 .8 1.2 2.1
-.4 -.1 -.7 .5 .5 -2.0 -1.8 -.7 -1.5 -.4 .3 -.1 -1.5 -.8 -.4 .0 .2 -2.3 3.2 1.0 3.4 7.6 2.5 1.7 2.2 3.1 .8 .4 1.7
1.6 1.4 1.1 1.3 .2 .8 -.3 .0 -1.6 -.8 1.1 .9 1.3 .6 1.1 1.3 3.6 .8 .3 2.4 2.7 4.4 2.0 1.4 2.7 2.0 -.2 3.9 1.6 3.0 3.1
1.6 2.4 2.4 1.4 2.1 .7 .5 .7 1.2 2.1 .5 .6 .7 1.5 1.8 .6 2.7 .6 -1.3 1.0 4.8 6.9 4.5 5.8 5.3 6.1 6.0 4.4 3.9 2.3 2.4 3.3 1.3
3.3 -.7 -1.0 -.4 -.5 1.7 2.5 2.0 1.2 3.4 .9 .1 .6 .8 -.1 .9 .4 1.4 2.6 -.8 -.2 3.6 7.8 6.0 6.4 7.4 6.8 5.2 4.4 4.4 6.1 4.4 2.9 .1
.6 .2 -.9 .3 .9 -.4 -2.5 1.1 1.6 1.1 1.6 1.0 1.6 1.8 .9 .6 2.3 2.8 4.6 5.8 6.7 5.6 4.0 3.2 3.8 3.3 4.7 3.1 2.6 4.1 .2 4.2
2.4 .1 .6 -.8 -.9 .3 1.1 .1 .9 1.1 2.0 1.2 1.1 .0 .3 .4 2.0 1.5 1.2 .9 2.1 4.9 3.1 3.3 1.7 2.3 4.4 6.5 10.6 10.9 9.5 4.3 5.5
-.5 -2.1 -1.3 -1.7 -1.9 -1.6 -1.4 -.7 -.9 -2.3 -1.3 -2.3 -1.8 -1.5 -1.9 -.9 -.5 -.8 -.7 .4 1.1 1.1 -.6 3.7 1.4 2.0 1.4 7.3 4.4 9.8 3.2 3.3 1.6
-1.3 -1.3 -1.2 -1.3 -1.0 -.9 -.9 -1.8 -2.4 -1.3 -1.1 -3.1 -1.7 -1.8 -2.4 -2.7 -1.4 -.7 -2.7 -3.1 -2.0 -2.1 1.3 -1.3 -4.3 .2 1.7 -1.9 .5 .5 .2 -.1 .0 .1
-.8 -.8 -.1 -1.2 -2.2 .2 -.6 .2 -.5 -1.4 -.8 -1.6 -1.7 -1.2 -1.8 -.7 -.8 -2.1 -.9 -1.8 -2.0 -2.7 -8.8 -.6 1.1 1.2 .4 .3 .9 -1.8
1.9 .6 -1.1 -1.2 -.2 -1.0

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
JUNE 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


4 5 3 4 11 8 5
4 4 4 4 4 4 4 4 5 4 4 4 5 4 4 3 5 3 4 8 8 8 8 8 10 7
5 4 5 5 4 5 6 5 5 5 4 4 5 4 4 5 5 6 7 8 8 12 9 8 10 11 11 7 10
6 4 4 4 4 4 5 4 5 5 7 4 4 4 4 5 6 4 4 9 10 7 7 6 7 8 8 7 6 7
6 5 6 5 5 5 5 5 5 5 5 4 4 4 4 4 5 4 4 7 8 15 11 13 11 11 11 9 8 6 8 11 8
6 5 5 5 5 5 5 5 5 5 3 4 4 4 5 5 5 5 5 4 3 7 14 12 11 13 1 11 11 9 10 8 6 7
4 5 5 5 5 6 9 5 5 7 6 5 5 5 4 8 5 6 7 10 12 9 8 8 9 9 9 9 11 9 9
7 6 5 5 5 5 4 5 5 5 6 6 6 4 5 4 4 4 6 4 4 7 10 12 12 9 10 11 15 19 17 11 8
7 5 5 5 5 5 5 6 6 6 7 6 6 5 5 5 5 6 7 5 5 7 4 9 17 12 9 12 8 17 10 15 9
5 5 5 5 5 6 5 6 6 5 5 7 8 6 6 7 6 6 7 7 6 7 7 7 8 7 7 9 7 6 7 6 7 7
5 5 6 6 6 6 6 6 5 6 5 5 5 5 5 6 6 6 8 8 7 18 8 8 7 6 7 8 10
6 6 8 7 5 6

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
JUNE 1997


1 1 1 1 1 1 1 0 0 3 3 2 2
3 4 4 6 7 19 36 49 45 14 9 10 10 6 2 2 3 2 1 1 0 0 0 3 8 15 15 15 14 10 4
17 12 11 10 9 16 27 55 79 35 29 29 34 38 31 24 4 1 3 4 2 0 1 0 0 0 1 4 10 18 21 25 22 21 19
16 8 9 16 11 11 36 101 15 65 85 87 64 80 48 20 1 1 3 1 0 1 0 1 2 5 18 22 19 18 13 14 15 14 12
63 62 65 81 90 117 147 264 155 111 118 122 122 111 64 13 3 3 2 1 2 3 2 3 10 1 14 32 23 19 15 13 13 15 11 11
105 111 131 130 145 140 134 223 131 135 32 124 135 122 94 9 5 3 6 4 5 3 4 8 9 10 11 42 22 19 19 18 16 13 15 18
95 108 128 103 82 51 14 51 65 69 84 92 74 44 27 3 0 1 1 2 1 4 8 7 8 9 22 9 2 10 10 11 13
74 83 75 63 59 34 14 7 9 12 18 33 28 24 23 7 0 0 0 0 0 1 0 0 1 18 12 6 4 2 2 3 6 12
32 28 30 32 47 65 55 28 31 27 32 19 33 35 34 32 6 3 2 1 1 1 0 0 4 10 1 9 9 7 8 9 8
7 7 12 16 22 32 57 26 27 22 26 31 38 27 24 25 10 7 6 3 3 4 5 0 0 0 0 1 7 8 8 8 11 7 10 8
2 2 2 2 5 10 12 9 9 9 9 12 14 9 9 7 3 3 4 4 2 2 1 0 2 8 14 11 13 9 6 1
0 1 1 1 2 1 1 0 0

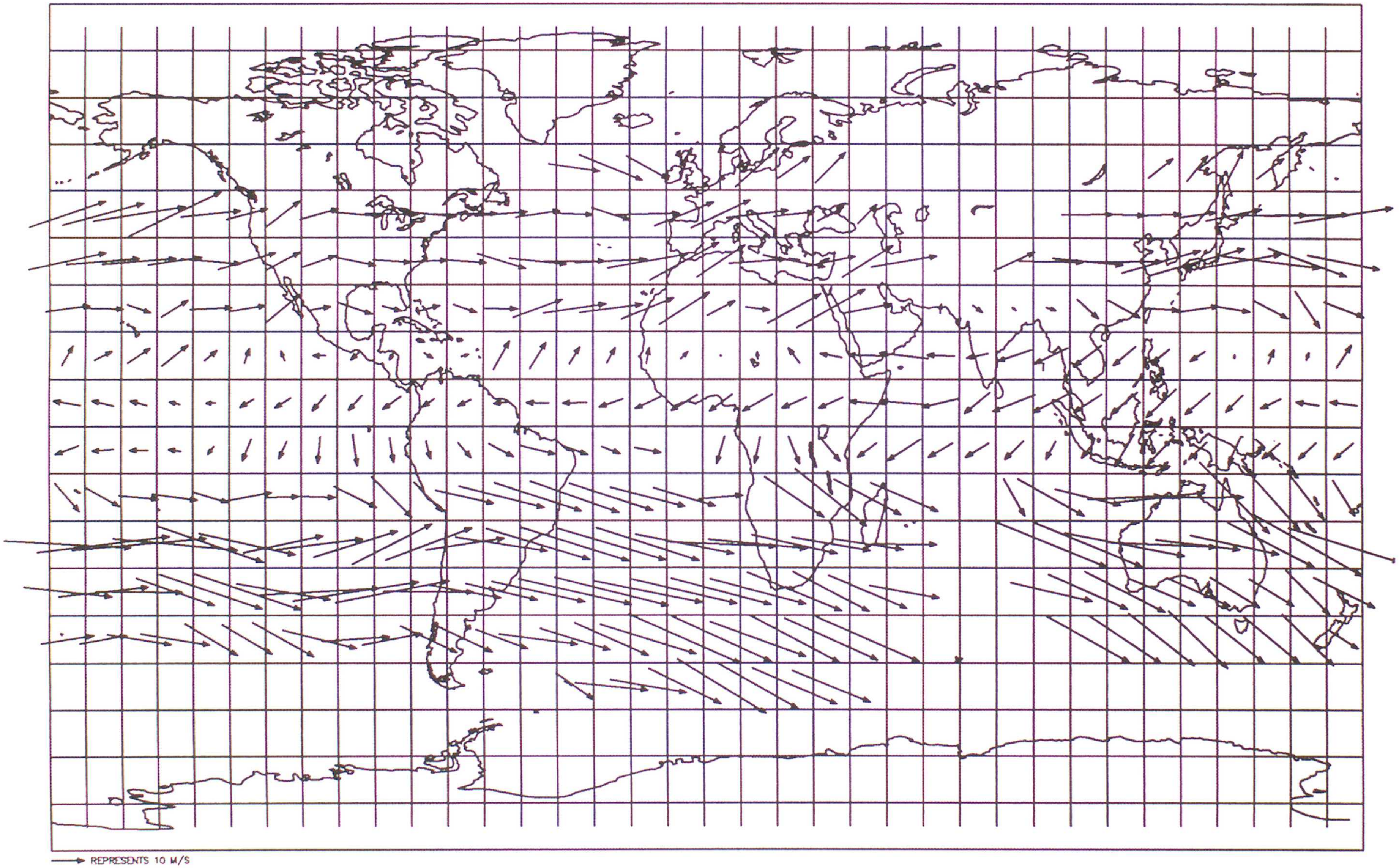
SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA

JUNE 1997

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21


REPRESENTS 10 M/S

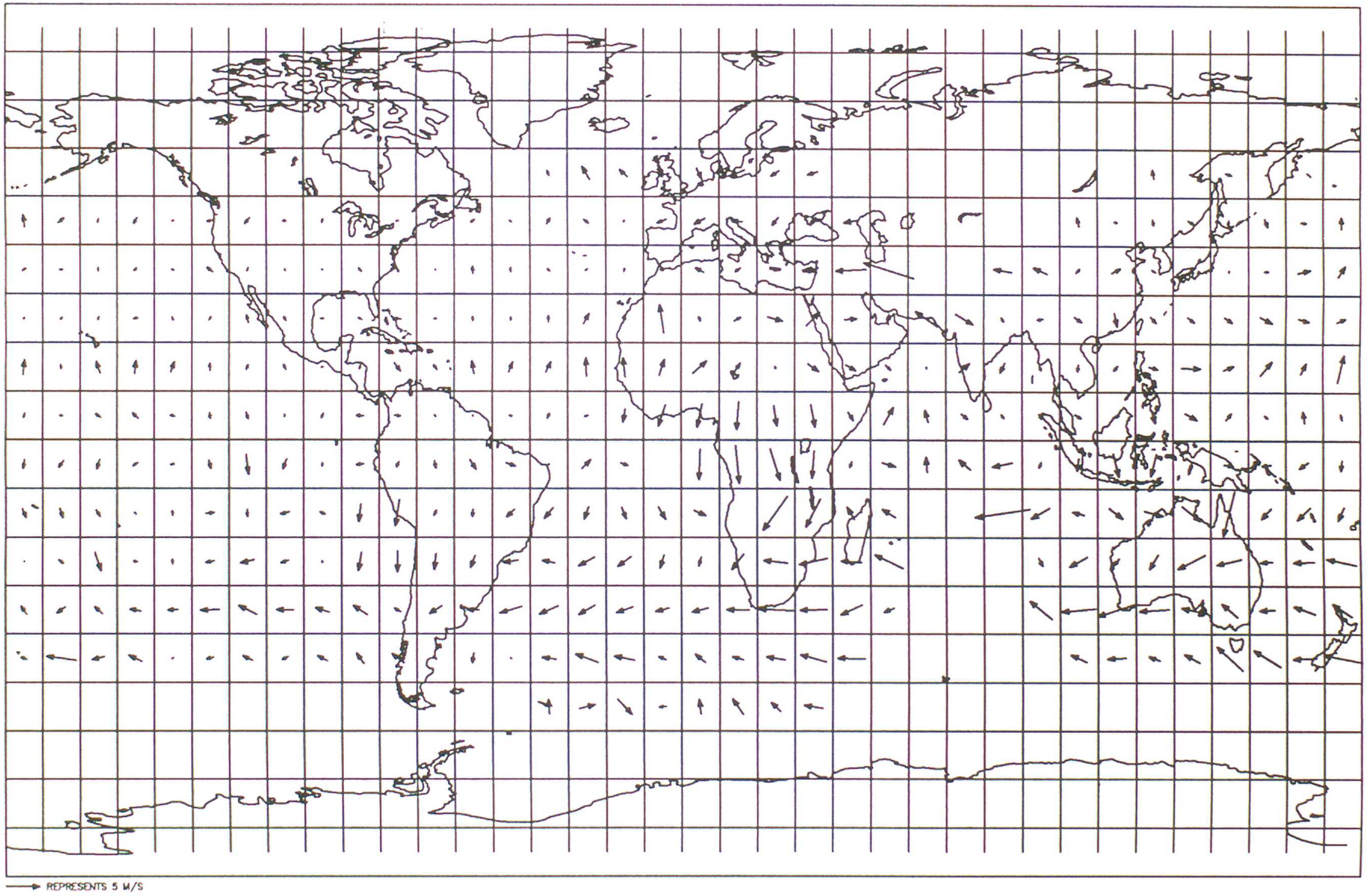
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA

FIGURE 22

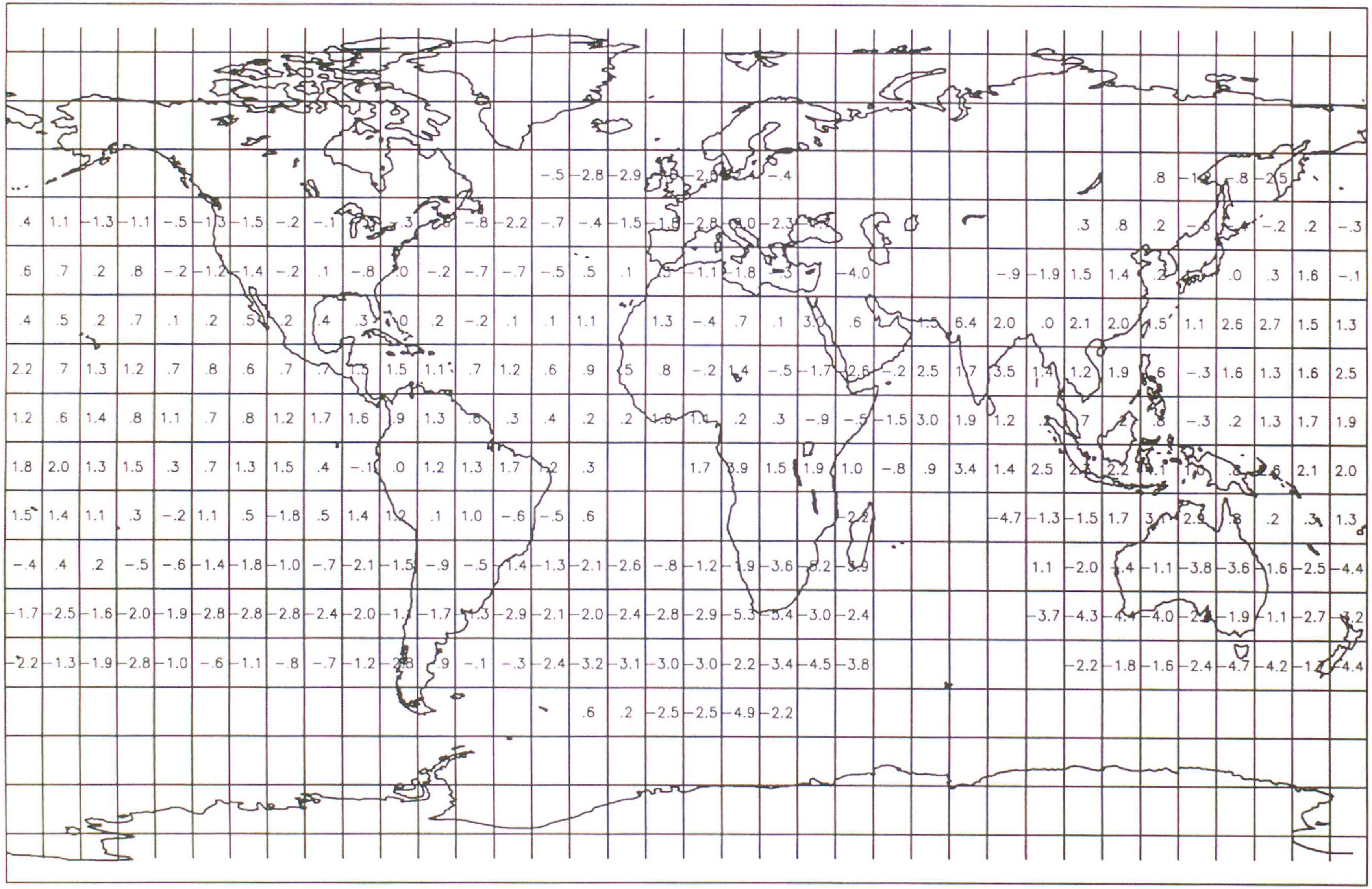
JUNE 1997

ALL OBSERVATIONS

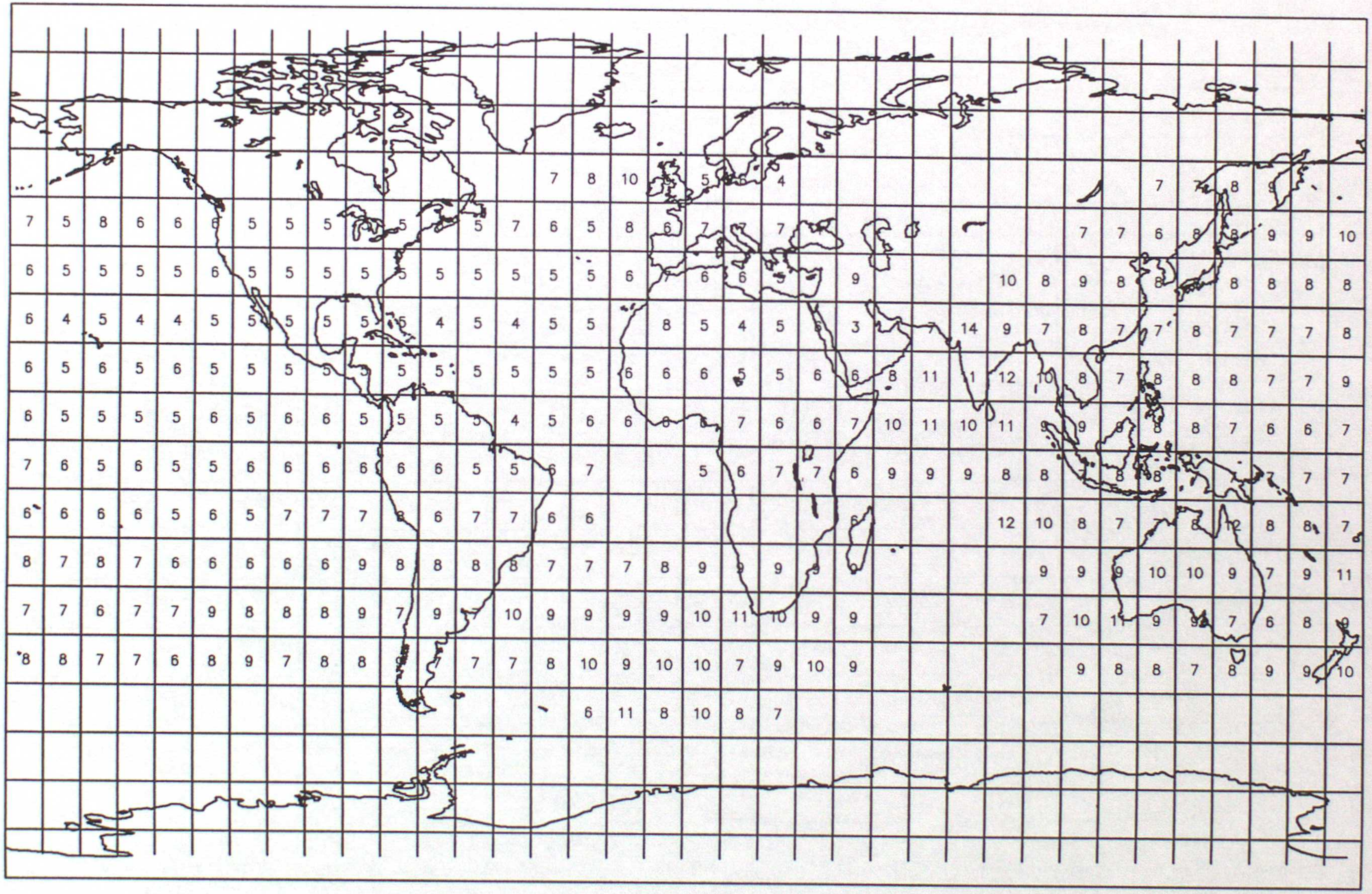
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 5 M/S

SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
JUNE 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-.5 -2.8 -2.9 -2.6 -.4 .8 -1.2 -.8 -2.5
.4 1.1 -1.3 -1.1 -.5 -1.3 -1.5 -.2 -.1 .3 -.8 -2.2 -.7 -.4 -1.5 -1.8 -2.8 -3.0 -2.3 .3 .8 .2 -.6 -.2 .2 -.3
.6 .7 .2 .8 -.2 -1.2 -1.4 -.2 .1 -.8 .0 -.2 -.7 -.7 -.5 .5 .1 .3 -1.1 -1.8 -.3 -4.0 -.9 -1.9 1.5 1.4 .2 .0 .3 1.6 -.1
.4 .5 .2 .7 .1 .2 .5 .2 .4 .3 .0 .2 -.2 .1 .1 1.1 1.3 -.4 .7 .1 3.0 .6 1.5 6.4 2.0 .0 2.1 2.0 1.5 1.1 2.6 2.7 1.5 1.3
2.2 .7 1.3 1.2 .7 .8 .6 .7 .7 1.5 1.5 1.1 .7 1.2 .6 .9 .5 .8 -.2 1.4 -.5 -1.7 2.6 -.2 2.5 1.7 3.5 1.4 1.2 1.9 .6 -.3 1.6 1.3 1.6 2.5
1.2 .6 1.4 .8 1.1 .7 .8 1.2 1.7 1.6 .9 1.3 .6 .3 .4 .2 .2 1.6 1.1 .2 .3 -.9 -.5 -1.5 3.0 1.9 1.2 .2 .7 .2 .8 -.3 .2 1.3 1.7 1.9
1.8 2.0 1.3 1.5 .3 .7 1.3 1.5 .4 -.1 .0 1.2 1.3 1.7 1.2 .3 1.7 3.9 1.5 1.9 1.0 -.8 .9 3.4 1.4 2.5 2.3 2.2 1.1 1.0 .8 2.6 2.1 2.0
1.5 1.4 1.1 .3 -.2 1.1 .5 -1.8 .5 1.4 1.2 .1 1.0 -.6 -.5 .6 -2.2 -4.7 -1.3 -1.5 1.7 3.1 2.9 .8 .2 .3 1.3
-.4 .4 .2 -.5 -.6 -1.4 -1.8 -1.0 -.7 -2.1 -1.5 -.9 -.5 -1.4 -1.3 -2.1 -2.6 -.8 -1.2 -1.9 -3.6 -3.2 -3.9 1.1 -2.0 -.4 -1.1 -3.8 -3.6 -1.6 -2.5 -4.4
-1.7 -2.5 -1.6 -2.0 -1.9 -2.8 -2.8 -2.8 -2.4 -2.0 -1.1 -1.7 -1.3 -2.9 -2.1 -2.0 -2.4 -2.8 -2.9 -5.3 -5.4 -3.0 -2.4 -3.7 -4.3 -4.4 -4.0 -2.3 -1.9 -1.1 -2.7 -3.2
-2.2 -1.3 -1.9 -2.8 -1.0 -.6 -1.1 -.8 -.7 -1.2 -2.8 .9 -.1 -.3 -2.4 -3.2 -3.1 -3.0 -3.0 -2.2 -3.4 -4.5 -3.8 -2.2 -1.8 -1.6 -2.4 -4.7 -4.2 -1.2 -4.4
.6 .2 -2.5 -2.5 -4.9 -2.2

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
JUNE 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: June, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-12, NOAA-14 500 km.

Standard of comparison :Background field from Bracknell global model.

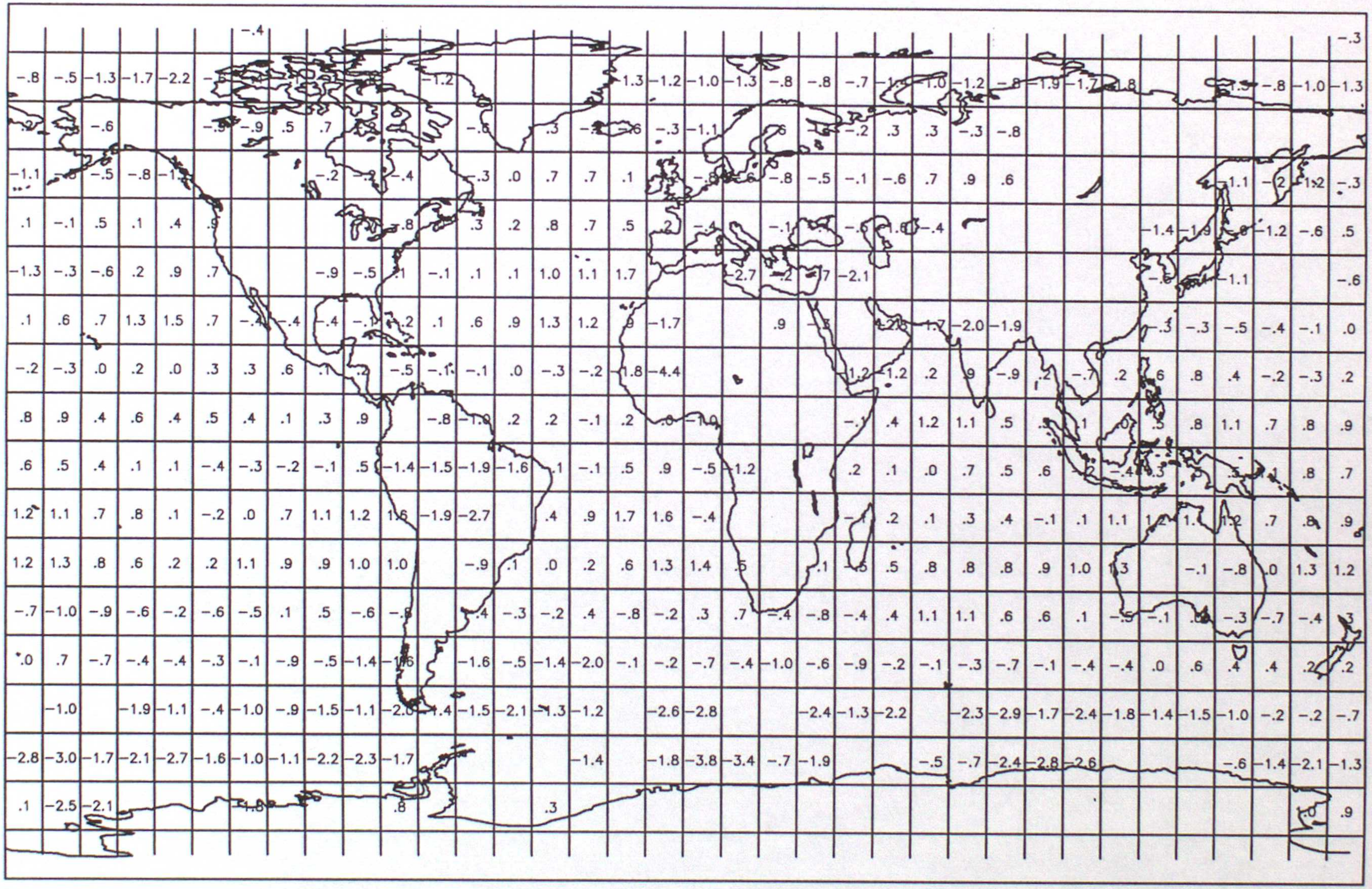
Selection Criteria :All SATEM soundings where number of observations > 30.

Data Extracted :Layer: 850 - 1000 hPa
100 - 300 hPa
30 - 50 hPa

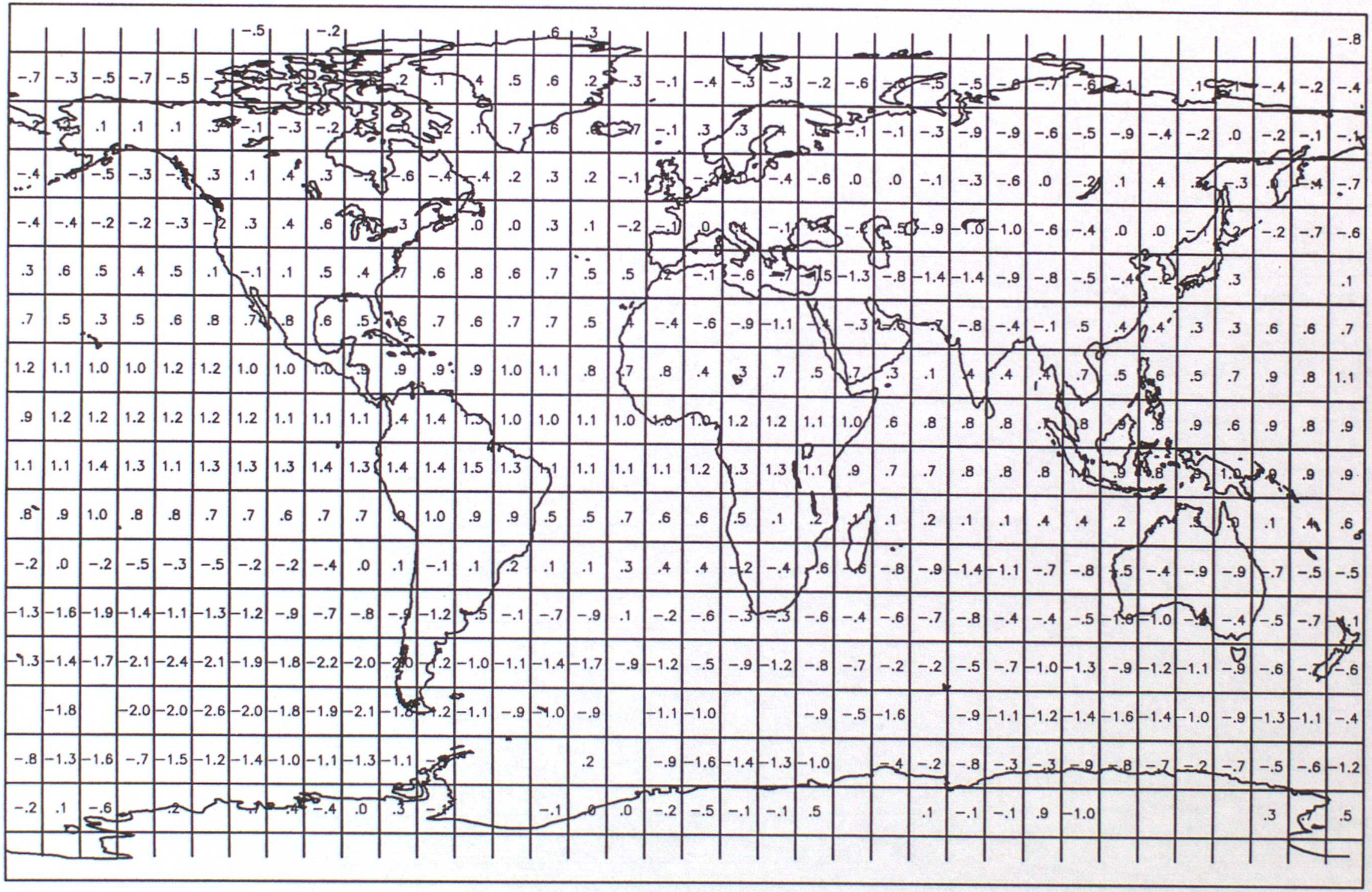
:Mean observation minus background temperature differences

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
JUNE 1997
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

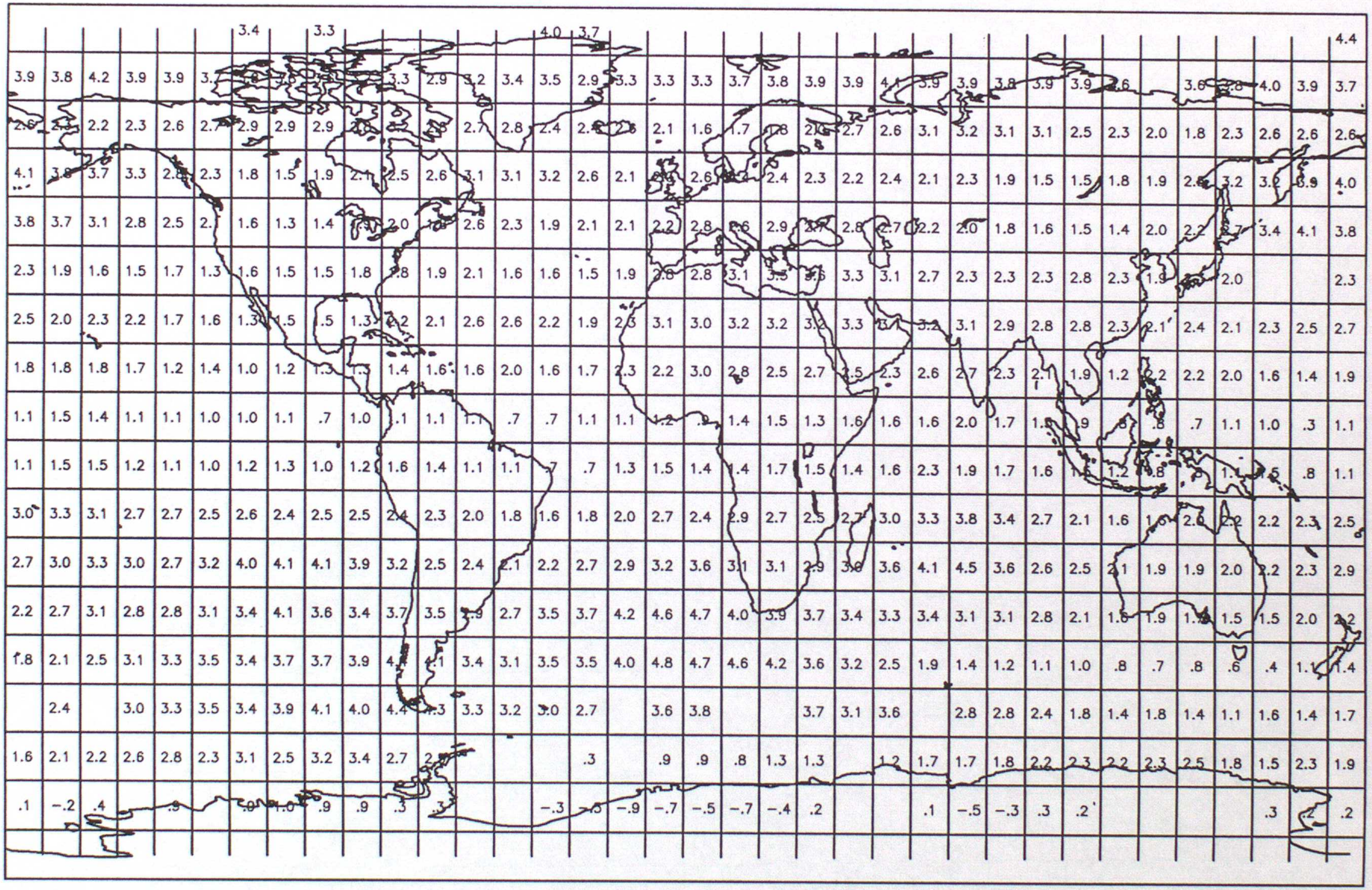
FIGURE 25


-.4 -.3
-.8 -.5 -1.3 -1.7 -2.2 -.5 -1.2 -1.3 -1.2 -1.0 -1.3 -.8 -.8 -.7 -1.0 -1.2 -.8 -1.9 -1.7 -.8 -1.3 -.8 -1.0 -1.3
.2 -.6 -.9 -.9 .5 .7 -.6 .3 -.6 -.3 -1.1 .6 -.2 .3 .3 -.3 -.8
-1.1 -.6 -.5 -.8 -.2 -.2 -.4 -.3 .0 .7 .7 .1 -.8 .6 -.8 -.5 -.1 -.6 .7 .9 .6 -1.1 -.2 1.2 -.3
.1 -.1 .5 .1 .4 .9 -.8 .3 .2 .8 .7 .5 .2 -.4 -.1 -.6 1.6 -.4 -1.4 -1.9 -.8 -1.2 -.6 .5
-1.3 -.3 -.6 .2 .9 .7 -.9 -.5 .1 -.1 .1 .1 1.0 1.1 1.7 -2.7 -.2 -.7 -2.1 -.6 -1.1 -.6
.1 .6 .7 1.3 1.5 .7 -.4 -.4 -.4 -.1 .2 .1 .6 .9 1.3 1.2 .9 -1.7 .9 -.3 -2.5 -1.7 -2.0 -1.9 -.3 -.3 -.5 -.4 -.1 .0
-.2 -.3 .0 .2 .0 .3 .3 .6 .1 .2 -.5 -.1 -.1 .0 -.3 -.2 -1.8 -4.4 -1.2 -1.2 .2 .9 -.9 .2 -.7 .2 .6 .8 .4 -.2 -.3 .2
.8 .9 .4 .6 .4 .5 .4 .1 .3 .9 -.8 -1.0 .2 .2 -.1 .2 -.6 -1.0 -.1 .4 1.2 1.1 .5 .5 .1 .0 .5 .8 1.1 .7 .8 .9
.6 .5 .4 .1 .1 -.4 -.3 -.2 -.1 .5 -1.4 -1.5 -1.9 -1.6 .1 -.1 .5 .9 -.5 -1.2 .2 .1 .0 .7 .5 .6 .2 -.4 .3 .5 .1 .8 .7
1.2 1.1 .7 .8 .1 -.2 .0 .7 1.1 1.2 1.6 -1.9 -2.7 .4 .9 1.7 1.6 -.4 -.1 .2 .1 .3 .4 -.1 .1 1.1 1.2 1.1 1.2 .7 .8 .9
1.2 1.3 .8 .6 .2 .2 1.1 .9 .9 1.0 1.0 -.9 .1 .0 .2 .6 1.3 1.4 .5 .1 -.5 .5 .8 .8 .8 .9 1.0 1.3 -.1 -.8 .0 1.3 1.2
-.7 -1.0 -.9 -.6 -.2 -.6 -.5 .1 .5 -.6 -.5 .4 -.3 -.2 .4 -.8 -.2 .3 .7 -.4 -.8 -.4 .4 1.1 1.1 .6 .6 .1 -.5 -.1 .8 -.3 -.7 -.4 .3
.0 .7 -.7 -.4 -.4 -.3 -.1 -.9 -.5 -1.4 -1.6 -1.6 -.5 -1.4 -2.0 -.1 -.2 -.7 -.4 -1.0 -.6 -.9 -.2 -.1 -.3 -.7 -.1 -.4 -.4 .0 .6 .4 .4 .2 .2
-1.0 -1.9 -1.1 -.4 -1.0 -.9 -1.5 -1.1 -2.0 -1.4 -1.5 -2.1 -1.3 -1.2 -2.6 -2.8 -2.4 -1.3 -2.2 -2.3 -2.9 -1.7 -2.4 -1.8 -1.4 -1.5 -1.0 -.2 -.2 -.7
-2.8 -3.0 -1.7 -2.1 -2.7 -1.6 -1.0 -1.1 -2.2 -2.3 -1.7 -1.4 -1.8 -3.8 -3.4 -.7 -1.9 -.5 -.7 -2.4 -2.8 -2.6 -.6 -1.4 -2.1 -1.3
.1 -2.5 -2.1 -1.8 .8 .3 -1.0 .9

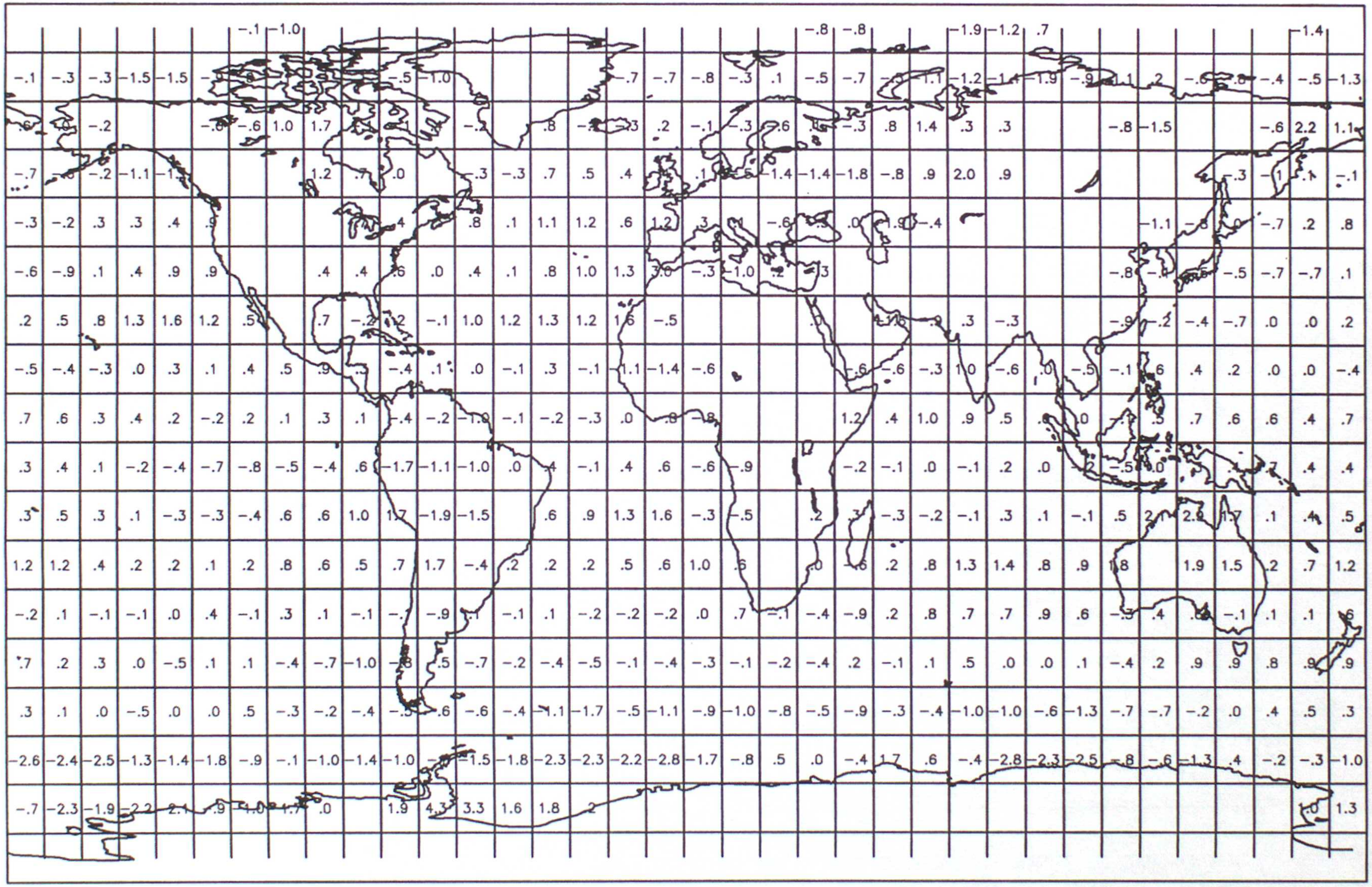
500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
JUNE 1997
FIGURE 26
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT


-.5 -.2 .6 .3 -.8
-.7 -.3 -.5 -.7 -.5 .2 .1 .4 .5 .6 .2 -.3 -.1 -.4 -.3 -.3 -.2 -.6 -.5 -.5 -.8 -.7 -.6 .1 .1 .1 -.4 -.2 -.4
.1 .1 .1 .3 -.1 -.3 -.2 .2 .1 .7 .6 .6 -.7 -.1 .3 .3 .4 .5 -.1 -.1 -.3 -.9 -.9 -.6 -.5 -.9 -.4 -.2 .0 -.2 -.1 -.1
-.4 -.6 -.5 -.3 -.3 .3 .1 .4 .3 -.2 -.6 -.4 -.4 .2 .3 .2 -.1 -.2 -.4 -.6 .0 .0 -.1 -.3 -.6 .0 -.2 .1 .4 .3 -.3 .0 -.4 -.7
-.4 -.4 -.2 -.2 -.3 -.2 .3 .4 .6 .3 .0 .0 .3 .1 -.2 -.1 .0 .4 -.1 .3 -.2 .5 -.9 -1.0 -1.0 -.6 -.4 .0 .0 -.1 .2 -.2 -.7 -.6
.3 .6 .5 .4 .5 .1 -.1 .1 .5 .4 .7 .6 .8 .6 .7 .5 .5 .2 -.1 -.6 -.7 -1.5 -1.3 -.8 -1.4 -1.4 -.9 -.8 -.5 -.4 -.2 .3 .1
.7 .5 .3 .5 .6 .8 .7 .8 .6 .5 .6 .7 .6 .7 .7 .5 .4 -.4 -.6 -.9 -1.1 -.4 -.3 -.6 -.7 -.8 -.4 -.1 .5 .4 .4 .3 .3 .6 .6 .7
1.2 1.1 1.0 1.0 1.2 1.2 1.0 1.0 1.0 .9 .9 .9 .9 1.0 1.1 .8 .7 .8 .4 .3 .7 .5 .7 .3 .1 .4 .4 .4 .7 .5 .6 .5 .7 .9 .8 1.1
.9 1.2 1.2 1.2 1.2 1.2 1.2 1.1 1.1 1.1 .4 1.4 1.3 1.0 1.0 1.1 1.0 1.0 1.0 1.2 1.2 1.1 1.0 .6 .8 .8 .8 .7 .8 .9 .8 .9 .6 .9 .8 .9
1.1 1.1 1.4 1.3 1.1 1.3 1.3 1.3 1.4 1.3 1.4 1.4 1.5 1.3 1.1 1.1 1.1 1.1 1.2 1.3 1.3 1.1 .9 .7 .7 .8 .8 .8 1.0 .9 .8 .9 1.0 .9 .9 .9
.8 .9 1.0 .8 .8 .7 .7 .6 .7 .7 .9 1.0 .9 .9 .5 .5 .7 .6 .6 .5 .1 .2 .1 .1 .2 .1 .1 .4 .4 .2 .5 .0 .1 .4 .6
-.2 .0 -.2 -.5 -.3 -.5 -.2 -.2 -.4 .0 .1 -.1 .1 .2 .1 .1 .3 .4 .4 -.2 -.4 .6 -.6 -.8 -.9 -1.4 -1.1 -.7 -.8 -.5 -.4 -.9 -.9 -.7 -.5 -.5
-1.3 -1.6 -1.9 -1.4 -1.1 -1.3 -1.2 -.9 -.7 -.8 -.9 -1.2 .5 -.1 -.7 -.9 .1 -.2 -.6 -.3 -.3 -.6 -.4 -.6 -.7 -.8 -.4 -.4 -.5 -1.0 -1.0 -.4 -.5 -.7 -.1
-1.3 -1.4 -1.7 -2.1 -2.4 -2.1 -1.9 -1.8 -2.2 -2.0 -2.0 -1.2 -1.0 -1.1 -1.4 -1.7 -.9 -1.2 -.5 -.9 -1.2 -.8 -.7 -.2 -.2 -.5 -.7 -1.0 -1.3 -.9 -1.2 -1.1 -.9 -.6 -.7 -.6
-1.8 -2.0 -2.0 -2.6 -2.0 -1.8 -1.9 -2.1 -1.8 -1.2 -1.1 -.9 -1.0 -.9 -1.1 -1.0 -.9 -.5 -1.6 -.9 -1.1 -1.2 -1.4 -1.6 -1.4 -1.0 -.9 -1.3 -1.1 -.4
-.8 -1.3 -1.6 -.7 -1.5 -1.2 -1.4 -1.0 -1.1 -1.3 -1.1 .2 -.9 -1.6 -1.4 -1.3 -1.0 -.4 -.2 -.8 -.3 -.3 -.9 -.8 -.7 -.2 -.7 -.5 -.6 -1.2
-.2 .1 -.6 .2 .7 .4 -.4 .0 .3 -.1 -.1 .0 .0 -.2 -.5 -.1 -.1 .5 .1 -.1 -.1 .9 -1.0 .3 .7 .5

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
JUNE 1997
FIGURE 27
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT


3.4 3.3 4.0 3.7 4.4
3.9 3.8 4.2 3.9 3.9 3.7 3.3 2.9 3.2 3.4 3.5 2.9 3.3 3.3 3.3 3.7 3.8 3.9 3.9 4.1 3.9 3.9 3.8 3.9 3.9 3.6 3.6 3.8 4.0 3.9 3.7
2.6 2.5 2.2 2.3 2.6 2.7 2.9 2.9 2.9 2.7 2.8 2.4 2.4 2.1 1.6 1.7 1.8 2.6 2.7 2.6 3.1 3.2 3.1 3.1 2.5 2.3 2.0 1.8 2.3 2.6 2.6 2.6
4.1 3.8 3.7 3.3 2.8 2.3 1.8 1.5 1.9 2.1 2.5 2.6 3.1 3.1 3.2 2.6 2.1 2.6 2.6 2.2 2.4 2.3 2.2 2.4 2.1 2.3 1.9 1.5 1.5 1.8 1.9 2.8 3.2 3.2 3.9 4.0
3.8 3.7 3.1 2.8 2.5 2. 1.6 1.3 1.4 2.0 2.6 2.3 1.9 2.1 2.1 2.2 2.8 2.6 2.9 2.7 2.8 2.7 2.2 2.0 1.8 1.6 1.5 1.4 2.0 2.2 2.7 3.4 4.1 3.8
2.3 1.9 1.6 1.5 1.7 1.3 1.6 1.5 1.5 1.8 1.8 1.9 2.1 1.6 1.6 1.5 1.9 2.8 2.8 3.1 3.5 3.6 3.3 3.1 2.7 2.3 2.3 2.3 2.8 2.3 1.9 2.0 2.3
2.5 2.0 2.3 2.2 1.7 1.6 1.3 1.5 .5 1.3 2.2 2.1 2.6 2.6 2.2 1.9 2.3 3.1 3.0 3.2 3.2 3.2 3.3 3.1 3.2 3.1 2.9 2.8 2.8 2.3 2.1 2.4 2.1 2.3 2.5 2.7
1.8 1.8 1.8 1.7 1.2 1.4 1.0 1.2 1.3 1.3 1.4 1.6 1.6 2.0 1.6 1.7 2.3 2.2 3.0 2.8 2.5 2.7 2.5 2.3 2.6 2.7 2.3 2.1 1.9 1.2 2.2 2.2 2.0 1.6 1.4 1.9
1.1 1.5 1.4 1.1 1.1 1.0 1.0 1.1 .7 1.0 1.1 1.1 1.1 .7 .7 1.1 1.1 1.2 .9 1.4 1.5 1.3 1.6 1.6 1.6 2.0 1.7 1.5 .9 .8 .8 .7 1.1 1.0 .3 1.1
1.1 1.5 1.5 1.2 1.1 1.0 1.2 1.3 1.0 1.2 1.6 1.4 1.1 1.1 .7 .7 1.3 1.5 1.4 1.4 1.7 1.5 1.4 1.6 2.3 1.9 1.7 1.6 1.1 1.2 1.8 1.1 1.5 .8 1.1
3.0 3.3 3.1 2.7 2.7 2.5 2.6 2.4 2.5 2.5 2.4 2.3 2.0 1.8 1.6 1.8 2.0 2.7 2.4 2.9 2.7 2.5 2.7 3.0 3.3 3.8 3.4 2.7 2.1 1.6 1.6 2.6 2.2 2.2 2.3 2.5
2.7 3.0 3.3 3.0 2.7 3.2 4.0 4.1 4.1 3.9 3.2 2.5 2.4 2.1 2.2 2.7 2.9 3.2 3.6 3.1 3.1 2.9 3.6 3.6 4.1 4.5 3.6 2.6 2.5 2.1 1.9 1.9 2.0 2.2 2.3 2.9
2.2 2.7 3.1 2.8 2.8 3.1 3.4 4.1 3.6 3.4 3.7 3.5 2.9 2.7 3.5 3.7 4.2 4.6 4.7 4.0 3.9 3.7 3.4 3.3 3.4 3.1 3.1 2.8 2.1 1.6 1.9 1.5 1.5 1.5 2.0 2.2
1.8 2.1 2.5 3.1 3.3 3.5 3.4 3.7 3.7 3.9 4.1 4.1 3.4 3.1 3.5 3.5 4.0 4.8 4.7 4.6 4.2 3.6 3.2 2.5 1.9 1.4 1.2 1.1 1.0 .8 .7 .8 .6 .4 1.1 1.4
2.4 3.0 3.3 3.5 3.4 3.9 4.1 4.0 4.4 4.3 3.3 3.2 3.0 2.7 3.6 3.8 3.7 3.1 3.6 2.8 2.8 2.4 1.8 1.4 1.8 1.4 1.1 1.6 1.4 1.7
1.6 2.1 2.2 2.6 2.8 2.3 3.1 2.5 3.2 3.4 2.7 2. .3 .9 .9 .8 1.3 1.3 1.2 1.7 1.7 1.8 2.2 2.3 2.2 2.3 2.5 1.8 1.5 2.3 1.9
.1 –.2 .4 .9 .9 1.0 .9 .9 .3 .3 –.3 –.3 –.9 –.7 –.5 –.7 –.4 .2 .1 –.5 –.3 .3 .2 .3 .2 .2

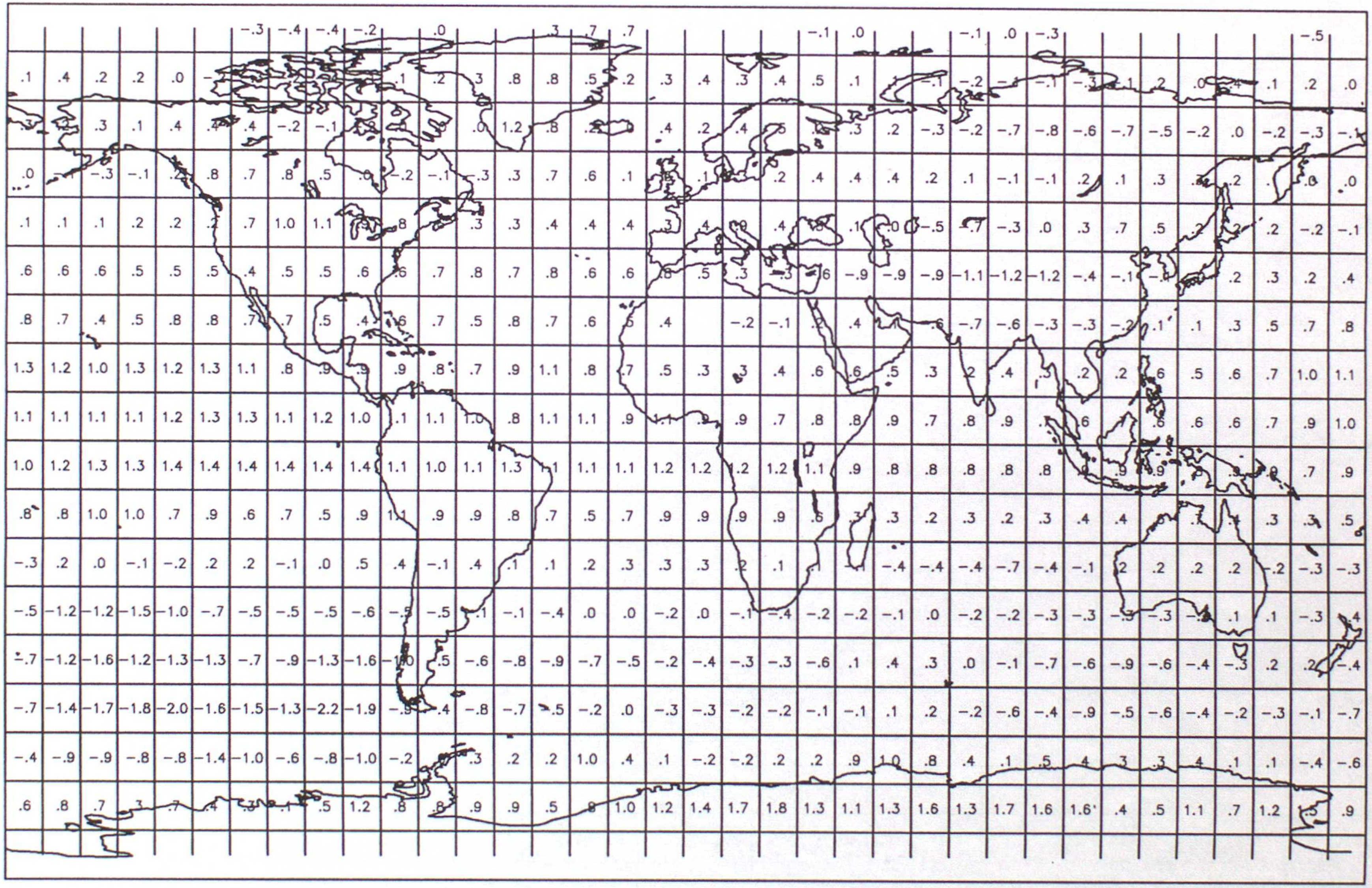
500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
JUNE 1997
FIGURE 28
NOAA-14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



−.1 −1.0 −.8 −.8 −1.9 −1.2 .7 −1.4
−.1 −.3 −.3 −1.5 −1.5 −.5 −1.0 −.7 −.7 −.8 −.3 .1 −.5 −.7 −1.1 −1.2 −1.4 −1.9 −.9 .2 −.4 −.5 −1.3
−.2 −.6 1.0 1.7 .8 .2 −.1 −.3 .6 −.3 .8 1.4 .3 .3 −.8 −1.5 −.6 2.2 1.1
−.7 −.2 −1.1 1.2 .0 −.3 −.3 .7 .5 .4 .1 −1.4 −1.4 −1.8 −.8 .9 2.0 .9 −.3 −.1
−.3 −.2 .3 .3 .4 .4 .8 .1 1.1 1.2 .6 1.2 .3 −.6 .0 −.4 −1.1 −.7 .2 .8
−.6 −.9 .1 .4 .9 .9 .4 .4 .0 .4 .1 .8 1.0 1.3 −.3 −1.0 .2 −.8 −.5 −.7 −.7 .1
.2 .5 .8 1.3 1.6 1.2 .5 .7 −.2 −.1 1.0 1.2 1.3 1.2 −.5 .3 −.3 −.2 −.4 −.7 .0 .0 .2
−.5 −.4 −.3 .0 .3 .1 .4 .5 .9 −.4 .1 .0 −.1 .3 −.1 −1.1 −1.4 −.6 −.6 −.6 −.3 1.0 −.6 .0 −.5 −.1 .6 .4 .2 .0 .0 −.4
.7 .6 .3 .4 .2 −.2 .2 .1 .3 .1 −.4 −.2 −.1 −.2 −.3 .0 1.2 .4 1.0 .9 .5 .0 .7 .6 .6 .4 .7
.3 .4 .1 −.2 −.4 −.7 −.8 −.5 −.4 .6 −1.7 −1.1 −1.0 .0 −.1 .4 .6 −.6 −.9 −.2 −.1 .0 −.1 .2 .0 −.5 .0 .4 .4
.3 .5 .3 .1 −.3 −.3 −.4 .6 .6 1.0 −1.9 −1.5 .6 .9 1.3 1.6 −.3 −.5 .2 −.3 −.2 −.1 .3 .1 −.1 .5 2.9 .1 .5
1.2 1.2 .4 .2 .2 .1 .2 .8 .6 .5 .7 1.7 −.4 .2 .2 .2 .5 .6 1.0 .2 .8 1.3 1.4 .8 .9 1.9 1.5 .2 .7 1.2
−.2 .1 −.1 −.1 .0 .4 −.1 .3 .1 −.1 −.9 −.1 .1 −.2 −.2 −.2 .0 .7 −.4 −.9 .2 .8 .7 .7 .9 .6 .4 −.1 .1 .1
.7 .2 .3 .0 −.5 .1 .1 −.4 −.7 −1.0 .5 −.7 −.2 −.4 −.5 −.1 −.4 −.3 −.1 −.2 −.4 .2 −.1 .1 .5 .0 .0 .1 −.4 .2 .9 .9 .8 .9
.3 .1 .0 −.5 .0 .0 .5 −.3 −.2 −.4 .6 −.6 −.4 −1.1 −1.7 −.5 −1.1 −.9 −1.0 −.8 −.5 −.9 −.3 −.4 −1.0 −1.0 −.6 −1.3 −.7 −.7 −.2 .0 .4 .5 .3
−2.6 −2.4 −2.5 −1.3 −1.4 −1.8 −.9 −.1 −1.0 −1.4 −1.0 −1.5 −1.8 −2.3 −2.3 −2.2 −2.8 −1.7 −.8 .5 .0 −.4 1.7 .6 −.4 −2.8 −2.3 −2.5 −.8 −.6 −1.3 .4 −.2 −.3 −1.0
−.7 −2.3 −1.9 −2.2 −2.1 −.9 −1.0 −1.7 .0 1.9 4.3 3.3 1.6 1.8 .2 1.0 1.3

500 KM SATEMS : MEAN O−B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
JUNE 1997
NOAA−14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 29


−.3 −.4 −.4 −.2 .0 .3 .7 .7 −.1 .0 −.1 .0 −.3 −.5
.1 .4 .2 .2 .0 .1 .2 .3 .8 .8 .5 .2 .3 .4 .3 .4 .5 .1 .1 −.1 −.2 −.1 −.3 .1 .2 .0 .4 .1 .2 .0
.3 .1 .4 .4 .4 −.2 −.1 .0 1.2 .8 .2 .4 .2 .4 .3 .2 −.3 −.2 −.7 −.8 −.6 −.7 −.5 −.2 .0 −.2 −.3 −.1
.0 −.3 −.1 .8 .7 .8 .5 −.2 −.1 −.3 .3 .7 .6 .1 .1 .2 .4 .4 .4 .2 .1 −.1 −.1 .2 .1 .3 .2 .0 .0
.1 .1 .1 .2 .2 .2 .7 1.0 1.1 .8 .3 .3 .4 .4 .4 .3 .4 .4 .1 .0 −.5 −.7 −.3 .0 .3 .7 .5 .2 −.2 −.1
.6 .6 .6 .5 .5 .5 .4 .5 .5 .6 .6 .7 .8 .7 .8 .6 .6 .8 .5 .3 .3 .6 −.9 −.9 −.9 −1.1 −1.2 −1.2 −.4 −.1 .2 .3 .2 .4
.8 .7 .4 .5 .8 .8 .7 .7 .5 .4 .6 .7 .5 .8 .7 .6 .4 −.2 −.1 .4 −.7 −.6 −.3 −.3 −.2 .1 .1 .3 .5 .7 .8
1.3 1.2 1.0 1.3 1.2 1.3 1.1 .8 .9 .9 .8 .7 .9 1.1 .8 .7 .5 .3 .3 .4 .6 .6 .5 .3 .2 .4 .3 .2 .2 .6 .5 .6 .7 1.0 1.1
1.1 1.1 1.1 1.1 1.2 1.3 1.3 1.1 1.2 1.0 .1 1.1 1.0 .8 1.1 1.1 .9 .9 .7 .8 .8 .9 .7 .8 .9 .6 .6 .6 .6 .7 .9 1.0
1.0 1.2 1.3 1.3 1.4 1.4 1.4 1.4 1.4 1.4 1.1 1.0 1.1 1.3 1.1 1.1 1.1 1.2 1.2 1.2 1.2 1.1 .9 .8 .8 .8 .8 .8 .9 .9 .7 .9
.8 .8 1.0 1.0 .7 .9 .6 .7 .5 .9 1.1 .9 .9 .8 .7 .5 .7 .9 .9 .9 .9 .6 .3 .3 .2 .3 .2 .3 .4 .4 .3 .3 .5
−.3 .2 .0 −.1 −.2 .2 .2 −.1 .0 .5 .4 −.1 .4 .1 .1 .2 .3 .3 .3 .2 .1 .1 −.4 −.4 −.4 −.7 −.4 −.1 .2 .2 .2 .2 −.2 −.3 −.3
−.5 −1.2 −1.2 −1.5 −1.0 −.7 −.5 −.5 −.5 −.6 −.5 .1 −.1 −.4 .0 .0 −.2 .0 −.1 −.4 −.2 −.2 −.1 .0 −.2 −.2 −.3 −.3 −.3 .1 .1 −.3 .4
−.7 −1.2 −1.6 −1.2 −1.3 −1.3 −.7 −.9 −1.3 −1.6 −1.0 .5 −.6 −.8 −.9 −.7 −.5 −.2 −.4 −.3 −.3 −.6 .1 .4 .3 .0 −.1 −.7 −.6 −.9 −.6 −.4 −.3 .2 .2 −.4
−.7 −1.4 −1.7 −1.8 −2.0 −1.6 −1.5 −1.3 −2.2 −1.9 .4 −.8 −.7 .5 −.2 .0 −.3 −.3 −.2 −.2 −.1 −.1 .1 .2 −.2 −.6 −.4 −.9 −.5 −.6 −.4 −.2 −.3 −.1 −.7
−.4 −.9 −.9 −.8 −.8 −1.4 −1.0 −.6 −.8 −1.0 −.2 .3 .2 .2 1.0 .4 .1 −.2 −.2 .2 .2 .9 1.0 .8 .4 .1 .5 .4 .3 .3 .4 .1 .1 −.4 −.6
.6 .8 .7 .3 .7 .4 .3 .1 .5 1.2 .8 .8 .9 .9 .5 .8 1.0 1.2 1.4 1.7 1.8 1.3 1.1 1.3 1.6 1.3 1.7 1.6 1.6 .4 .5 1.1 .7 1.2 1.5 .9

500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
JUNE 1997
FIGURE 30
NOAA-14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

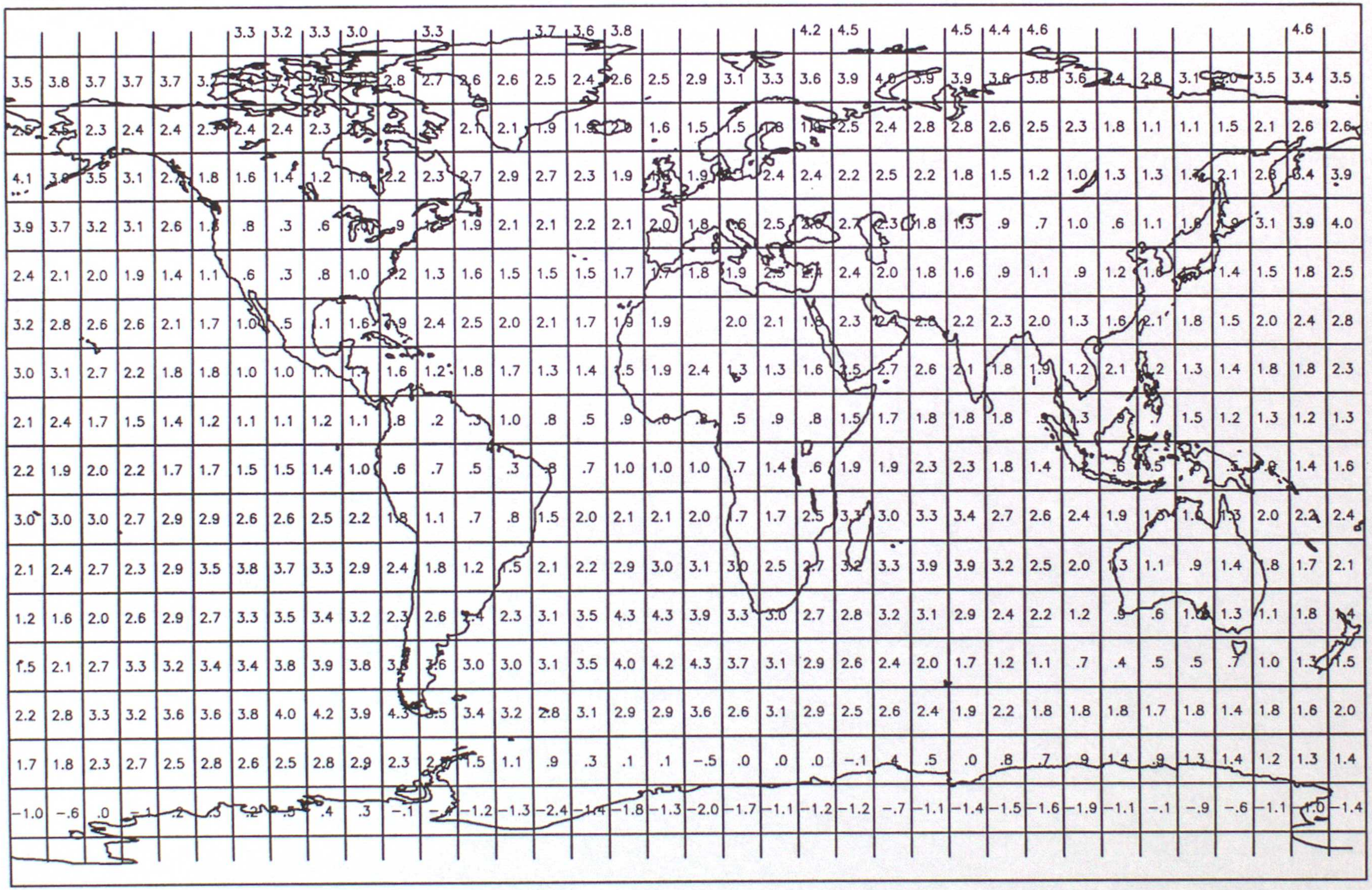

3.3 3.2 3.3 3.0 3.3 3.7 3.6 3.8 4.2 4.5 4.5 4.4 4.6 4.6
3.5 3.8 3.7 3.7 3.7 2.8 2.7 2.6 2.6 2.5 2.4 2.6 2.5 2.9 3.1 3.3 3.6 3.9 4.0 3.9 3.9 3.6 3.8 3.6 3.4 2.8 3.1 3.0 3.5 3.4 3.5
2.5 2.5 2.3 2.4 2.4 2.3 2.4 2.4 2.3 2.4 2.1 2.1 1.9 1.9 2.0 1.6 1.5 1.5 1.8 1.9 2.5 2.4 2.8 2.8 2.6 2.5 2.3 1.8 1.1 1.1 1.5 2.1 2.6 2.6
4.1 3.8 3.5 3.1 2.7 1.8 1.6 1.4 1.2 1.8 2.2 2.3 2.7 2.9 2.7 2.3 1.9 1.9 1.9 2.4 2.4 2.2 2.5 2.2 1.8 1.5 1.2 1.0 1.3 1.3 1.7 2.1 2.8 3.4 3.9
3.9 3.7 3.2 3.1 2.6 1.8 .8 .3 .6 1.0 .9 1.5 1.9 2.1 2.1 2.2 2.1 2.0 1.8 1.6 2.5 2.0 2.7 2.3 1.8 1.3 .9 .7 1.0 .6 1.1 1.8 1.9 3.1 3.9 4.0
2.4 2.1 2.0 1.9 1.4 1.1 .6 .3 .8 1.0 1.2 1.3 1.6 1.5 1.5 1.5 1.7 1.7 1.8 1.9 2.3 2.4 2.4 2.0 1.8 1.6 .9 1.1 .9 1.2 1.6 1.4 1.5 1.8 2.5
3.2 2.8 2.6 2.6 2.1 1.7 1.0 .5 .1 1.6 1.9 2.4 2.5 2.0 2.1 1.7 1.9 1.9 2.0 2.1 1.9 2.3 2.4 2.8 2.2 2.3 2.0 1.3 1.6 2.1 1.8 1.5 2.0 2.4 2.8
3.0 3.1 2.7 2.2 1.8 1.8 1.0 1.0 1.1 1.4 1.6 1.2 1.8 1.7 1.3 1.4 1.5 1.9 2.4 1.3 1.3 1.6 2.5 2.7 2.6 2.1 1.8 1.9 1.2 2.1 1.2 1.3 1.4 1.8 1.8 2.3
2.1 2.4 1.7 1.5 1.4 1.2 1.1 1.1 1.2 1.1 .8 .2 .3 1.0 .8 .5 .9 .6 .8 .5 .9 .8 1.5 1.7 1.8 1.8 1.8 1.3 .9 .7 1.5 1.2 1.3 1.2 1.3
2.2 1.9 2.0 2.2 1.7 1.7 1.5 1.5 1.4 1.0 .6 .7 .5 .3 .8 .7 1.0 1.0 1.0 .7 1.4 .6 1.9 1.9 2.3 2.3 1.8 1.4 1.2 .6 .5 .5 .9 1.4 1.6
3.0 3.0 3.0 2.7 2.9 2.9 2.6 2.6 2.5 2.2 1.8 1.1 .7 .8 1.5 2.0 2.1 2.1 2.0 1.7 1.7 2.5 3.3 3.0 3.3 3.4 2.7 2.6 2.4 1.9 1.6 1.0 1.3 2.0 2.2 2.4
2.1 2.4 2.7 2.3 2.9 3.5 3.8 3.7 3.3 2.9 2.4 1.8 1.2 1.5 2.1 2.2 2.9 3.0 3.1 3.0 2.5 2.7 3.2 3.3 3.9 3.9 3.2 2.5 2.0 1.3 1.1 .9 1.4 1.8 1.7 2.1
1.2 1.6 2.0 2.6 2.9 2.7 3.3 3.5 3.4 3.2 2.3 2.6 2.4 2.3 3.1 3.5 4.3 4.3 3.9 3.3 3.0 2.7 2.8 3.2 3.1 2.9 2.4 2.2 1.2 .9 .6 1.0 1.3 1.1 1.8 1.4
1.5 2.1 2.7 3.3 3.2 3.4 3.4 3.8 3.9 3.8 3.8 3.6 3.0 3.0 3.1 3.5 4.0 4.2 4.3 3.7 3.1 2.9 2.6 2.4 2.0 1.7 1.2 1.1 .7 .4 .5 .5 .7 1.0 1.3 1.5
2.2 2.8 3.3 3.2 3.6 3.6 3.8 4.0 4.2 3.9 4.3 3.5 3.4 3.2 2.8 3.1 2.9 2.9 3.6 2.6 3.1 2.9 2.5 2.6 2.4 1.9 2.2 1.8 1.8 1.8 1.7 1.8 1.4 1.8 1.6 2.0
1.7 1.8 2.3 2.7 2.5 2.8 2.6 2.5 2.8 2.9 2.3 1.5 1.1 .9 .3 .1 .1 -.5 .0 .0 .0 -.1 .4 .5 .0 .8 .7 .9 1.4 .9 1.3 1.4 1.2 1.3 1.4
-1.0 -.6 .0 -.1 .2 .3 .2 .5 .4 .3 -.1 -.4 -1.2 -1.3 -2.4 -1.4 -1.8 -1.3 -2.0 -1.7 -1.1 -1.2 -1.2 -.7 -1.1 -1.4 -1.5 -1.6 -1.9 -1.1 -.1 -.9 -.6 -1.1 -1.0 -1.4

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored :Mean sea-level pressure (hPa)
:Wind speed ($m\ s^{-1}$)
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 $m\ s^{-1}$ (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13903	25.5	-36.4	ALL	MSLP	SUR	188	0	0	0.8	0.8	1.2
13905	21.2	-44.1	ALL	MSLP	SUR	188	3	2	0.8	0.6	1.0
13906	15.6	-49.0	ALL	MSLP	SUR	201	0	0	1.0	0.8	1.3
13910	24.1	-45.1	ALL	MSLP	SUR	196	0	0	0.8	0.4	0.9
13911	25.3	-52.6	ALL	MSLP	SUR	215	0	0	0.9	0.9	1.3
13912	17.9	-61.2	ALL	MSLP	SUR	210	0	0	1.0	1.3	1.6
13913	19.9	-47.9	ALL	MSLP	SUR	199	0	0	1.0	0.9	1.3
13915	16.8	-47.5	ALL	MSLP	SUR	204	0	0	1.7	0.2	1.7
23946	40.7	-73.9	ALL	MSLP	SUR	4	4	100	0.0	0.0	0.0
29706	35.2	-41.0	ALL	MSLP	SUR	3	0	0	0.5	-0.9	1.0
41529	36.9	-32.5	ALL	MSLP	SUR	185	0	0	1.0	0.4	1.0
41530	33.6	-24.6	ALL	MSLP	SUR	170	0	0	0.8	0.3	0.8
41611	12.5	-63.4	ALL	MSLP	SUR	189	0	0	0.9	0.0	0.9
41612	17.1	-61.9	ALL	MSLP	SUR	135	0	0	1.4	-0.1	1.4
41613	22.3	-67.9	ALL	MSLP	SUR	197	0	0	0.8	0.7	1.1
41922	24.9	-47.4	ALL	MSLP	SUR	210	0	0	0.9	1.5	1.8
41924	23.8	-54.3	ALL	MSLP	SUR	184	0	0	0.9	-0.7	1.1
41943	12.4	-63.3	ALL	MSLP	SUR	22	0	0	0.9	0.6	1.1
44513	52.9	-22.5	ALL	MSLP	SUR	206	0	0	0.8	0.0	0.8
44605	46.6	-31.4	ALL	MSLP	SUR	742	0	0	0.9	0.4	1.0
44607	48.2	-32.2	ALL	MSLP	SUR	808	0	0	1.1	0.6	1.2
44608	55.1	-29.2	ALL	MSLP	SUR	879	0	0	1.2	0.4	1.2
44613	57.5	-34.4	ALL	MSLP	SUR	864	9	1	1.4	0.3	1.5
44621	53.6	-44.5	ALL	MSLP	SUR	199	0	0	1.1	0.0	1.1
44624	57.0	-21.4	ALL	MSLP	SUR	1045	4	0	1.1	0.4	1.2
44726	59.3	-9.8	ALL	MSLP	SUR	1029	2	0	0.9	0.5	1.0
44727	55.9	-41.4	ALL	MSLP	SUR	1569	3	0	1.2	0.2	1.2
44728	60.8	-26.0	ALL	MSLP	SUR	1035	4	0	1.0	0.4	1.1
44742	43.9	-21.5	ALL	MSLP	SUR	438	0	0	0.9	0.1	0.9
44743	48.4	-15.7	ALL	MSLP	SUR	596	6	1	1.0	0.3	1.1
44760	30.0	-59.6	ALL	MSLP	SUR	269	2	1	0.9	0.2	1.0
44762	43.4	-24.1	ALL	MSLP	SUR	452	0	0	1.0	0.1	1.0
44767	62.1	-10.8	ALL	MSLP	SUR	106	2	2	4.5	-0.9	4.6
44768	60.4	-36.1	ALL	MSLP	SUR	790	0	0	0.8	0.4	0.9
44769	50.4	-47.3	ALL	MSLP	SUR	615	0	0	1.2	-0.1	1.3
44773	55.8	-40.1	ALL	MSLP	SUR	723	0	0	0.9	0.2	1.0
44775	61.2	-36.3	ALL	MSLP	SUR	777	0	0	0.8	0.3	0.8
44776	57.9	-6.9	ALL	MSLP	SUR	23	0	0	0.7	-0.1	0.7
44779	45.9	-35.5	ALL	MSLP	SUR	717	5	1	1.1	0.3	1.1
44911	58.0	-20.8	ALL	MSLP	SUR	64	0	0	0.9	0.9	1.3
44912	52.7	-48.9	ALL	MSLP	SUR	107	0	0	1.3	0.7	1.4
44925	58.8	-53.1	ALL	MSLP	SUR	97	1	1	0.9	1.0	1.3
49706	37.9	-47.3	ALL	MSLP	SUR	3	0	0	3.5	1.9	3.9
62503	34.5	-13.5	ALL	MSLP	SUR	458	0	0	0.8	0.0	0.8
62515	44.8	-16.8	ALL	MSLP	SUR	520	0	0	1.0	0.3	1.0
62518	43.5	-14.5	ALL	MSLP	SUR	124	0	0	2.3	-0.9	2.4
62552	53.5	-18.3	ALL	MSLP	SUR	584	2	0	1.3	0.0	1.3
62553	47.2	-23.8	ALL	MSLP	SUR	529	1	0	0.8	0.2	0.8
62554	48.8	-18.2	ALL	MSLP	SUR	504	0	0	0.9	0.3	1.0
62555	47.8	-19.5	ALL	MSLP	SUR	520	0	0	0.8	0.0	0.8
62556	51.8	-19.9	ALL	MSLP	SUR	574	0	0	0.8	0.4	0.9
62697	62.8	-23.9	ALL	MSLP	SUR	742	0	0	2.8	-3.1	4.2
62712	53.4	-17.4	ALL	MSLP	SUR	555	0	0	0.9	0.5	1.0
62713	45.4	-27.4	ALL	MSLP	SUR	776	3	0	1.1	0.2	1.1
62803	58.6	-14.1	ALL	MSLP	SUR	1572	3	0	1.0	0.3	1.1
62804	55.4	-20.9	ALL	MSLP	SUR	682	0	0	0.9	0.2	0.9
62927	50.9	-23.1	ALL	MSLP	SUR	79	0	0	0.8	0.8	1.2
62928	60.8	-30.2	ALL	MSLP	SUR	1	0	0	0.0	1.3	1.3
64528	63.0	-29.6	ALL	MSLP	SUR	1599	2	0	0.9	0.0	0.9
64561	56.3	-54.6	ALL	MSLP	SUR	848	6	1	1.3	0.1	1.3

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
64563	60.4	-43.1	ALL	MSLP	SUR	1492	2	0	1.2	-0.3	1.2
65593	62.4	-28.6	ALL	MSLP	SUR	102	1	1	1.4	0.2	1.5
65594	60.7	-26.3	ALL	MSLP	SUR	1714	5	0	1.1	0.3	1.1
65596	55.2	-56.7	ALL	MSLP	SUR	718	1	0	1.3	-0.4	1.3
65597	58.0	-46.5	ALL	MSLP	SUR	1413	1	0	1.3	0.0	1.3
65598	59.9	-53.6	ALL	MSLP	SUR	1296	4	0	1.3	-0.4	1.4
WIND SPEED											
29706	35.2	-41.0	ALL	SPEED	SUR	4	0	0	1.5	3.6	3.9
41530	33.6	-24.6	ALL	SPEED	SUR	160	0	0	1.4	-2.0	2.5
41612	17.1	-61.9	ALL	SPEED	SUR	99	0	0	1.5	-2.6	3.1
41613	22.3	-67.9	ALL	SPEED	SUR	187	0	0	1.4	-1.2	1.8
44513	52.9	-22.5	ALL	SPEED	SUR	117	0	0	2.0	-1.7	2.6
44621	53.6	-44.5	ALL	SPEED	SUR	192	0	0	3.2	-2.7	4.2
44624	57.0	-21.4	ALL	SPEED	SUR	663	1	0	2.2	-0.3	2.2
44726	59.3	-9.8	ALL	SPEED	SUR	675	2	0	1.9	-1.2	2.3
44742	43.9	-21.5	ALL	SPEED	SUR	248	0	0	1.2	0.1	1.2
44762	43.4	-24.1	ALL	SPEED	SUR	251	0	0	1.8	-0.1	1.8
44773	55.8	-40.1	ALL	SPEED	SUR	696	1	0	1.8	-0.5	1.8
49706	37.9	-47.3	ALL	SPEED	SUR	3	0	0	1.9	0.5	1.9
62518	43.5	-14.5	ALL	SPEED	SUR	192	0	0	2.8	-2.5	3.8
62552	53.5	-18.3	ALL	SPEED	SUR	566	0	0	1.3	-0.9	1.6
62553	47.2	-23.8	ALL	SPEED	SUR	517	0	0	1.8	-0.1	1.8
62803	58.6	-14.1	ALL	SPEED	SUR	324	1	0	4.0	-6.1	7.3
WIND DIRECTION											
29706	35.2	-41.0	ALL	DIRN.	SUR	4	0	0	9.7	2.5	10.0
41530	33.6	-24.6	ALL	DIRN.	SUR	118	0	0	15.9	12.8	20.4
41612	17.1	-61.9	ALL	DIRN.	SUR	99	0	0	17.4	5.4	18.3
41613	22.3	-67.9	ALL	DIRN.	SUR	148	0	0	24.3	5.1	24.8
44513	52.9	-22.5	ALL	DIRN.	SUR	72	0	0	66.6	35.1	75.2
44621	53.6	-44.5	ALL	DIRN.	SUR	155	0	0	34.0	-15.4	37.4
44624	57.0	-21.4	ALL	DIRN.	SUR	425	1	0	21.9	11.0	24.5
44726	59.3	-9.8	ALL	DIRN.	SUR	511	2	0	19.7	0.5	19.7
44742	43.9	-21.5	ALL	DIRN.	SUR	203	0	0	14.3	-5.7	15.4
44762	43.4	-24.1	ALL	DIRN.	SUR	205	0	0	22.6	0.8	22.6
44773	55.8	-40.1	ALL	DIRN.	SUR	492	1	0	26.1	-4.5	26.5
49706	37.9	-47.3	ALL	DIRN.	SUR	3	0	0	17.7	-15.0	23.2
62518	43.5	-14.5	ALL	DIRN.	SUR	130	0	0	34.9	-3.9	35.1
62552	53.5	-18.3	ALL	DIRN.	SUR	415	0	0	16.3	6.9	17.7
62553	47.2	-23.8	ALL	DIRN.	SUR	441	0	0	18.4	5.2	19.1
62803	58.6	-14.1	ALL	DIRN.	SUR	216	1	0	65.8	1.2	65.8

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

		TEMPERATURE				WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3203	0	1	1.7	0.1	3242	0	2	0	6.9	0.7
ACA	1816	0	1	1.9	0.0	1850	0	2	1	6.5	0.9
AEA	365	0	2	3.0	1.5	364	0	4	0	9.6	0.7
AEL	169	0	4	1.7	-1.1	166	0	6	0	7.4	1.0
AEY	25	0	4	2.7	0.9	24	0	0	0	7.9	2.2
AFL	176	1	6	2.2	0.6	178	1	4	0	9.0	0.8
AFR	1046	0	7	1.8	0.1	1043	0	7	0	7.3	0.6
AIH	272	0	2	1.7	0.1	264	0	4	0	9.1	0.6
AJM	39	0	3	1.5	0.1	39	0	10	0	12.8	0.9
AMT	22	0	18	2.9	0.3	22	0	18	0	7.1	2.6
AMX	187	2	5	1.5	0.0	188	0	9	1	9.8	2.1
ANZ	214	1	2	2.1	-0.8	215	0	2	1	6.4	0.7
AOM	262	1	2	1.9	1.1	257	0	3	0	7.3	0.9
ATN	51	0	22	3.0	-2.5	52	0	100	0	20.9	3.5
AUA	48	0	0	1.3	-0.6	50	0	2	0	6.7	1.6
AVA	154	0	1	1.6	0.1	154	0	2	0	8.7	0.7
AZA	474	1	4	1.7	0.1	471	0	6	0	7.7	0.9
BAL	583	0	14	1.6	-0.5	600	0	16	0	7.5	0.8
BAW	1639	0	11	1.8	0.0	1662	0	12	0	7.7	0.9
BBB	22	0	5	1.2	0.0	22	0	5	0	8.3	-0.7
BWA	72	0	76	2.4	1.6	73	0	5	0	10.9	0.1
CDN	451	1	2	1.9	0.2	451	0	2	1	6.8	0.6
CFG	622	1	2	1.9	-1.0	633	0	4	0	8.7	0.6
CKT	157	0	3	2.3	0.9	161	0	4	0	8.2	0.7
CLX	260	0	3	1.9	-0.8	266	0	2	0	7.2	0.9
CMM	349	0	1	1.8	0.3	350	0	1	0	6.6	1.0
COA	687	0	3	1.6	0.4	696	0	4	0	8.5	1.0
CRL	184	1	2	1.7	0.2	187	1	5	0	8.4	0.5
CSA	28	0	0	1.6	-1.2	29	0	7	0	7.9	3.2
CTB	148	0	1	1.9	0.1	150	0	3	1	9.0	1.6
CTM	33	0	9	1.9	-0.6	34	0	9	0	6.9	0.4
CUB	227	0	5	1.9	0.7	223	0	36	0	8.0	0.5
DAL	3568	0	2	1.7	0.1	3605	0	2	0	8.1	0.9
DHL	94	1	100	3.6	-2.0	93	0	4	2	9.1	0.7
DLH	2763	0	7	1.9	0.1	2769	0	10	2	7.4	0.9
DOA	21	0	0	1.5	-1.0	22	0	0	0	4.9	-0.4
EIA	20	0	20	1.0	-0.5	22	0	23	0	11.2	1.6
EIN	28	0	14	2.6	-1.2	25	0	12	0	9.7	1.4
ELY	135	1	7	1.5	0.1	139	0	8	0	8.9	0.7
EWW	130	5	100	3.2	0.9	133	0	100	0	13.7	2.4
FDX	299	1	2	1.3	0.6	300	0	3	1	7.9	0.2
FIN	548	0	3	2.0	0.5	547	0	5	2	7.9	1.0
GAF	140	1	1	2.0	-0.2	143	0	3	1	9.0	0.6
HLF	130	0	2	1.6	-0.6	135	0	3	0	9.0	1.6
IBE	1136	1	13	2.1	0.6	1147	0	14	0	8.8	0.6
ICE	679	0	1	1.9	0.0	675	0	0	0	6.6	0.7
KLM	2322	0	2	1.8	0.1	2343	0	3	0	8.1	1.3
LDA	118	0	6	1.6	-0.5	124	0	9	0	7.4	0.8
LDI	197	1	18	1.9	-1.0	205	0	20	0	8.0	0.6
LIB	89	0	1	2.2	0.6	90	1	3	0	7.8	0.6
LKR	63	0	0	1.1	0.6	63	2	2	0	5.4	-0.2
LOT	467	0	1	2.2	-1.1	467	0	1	0	7.0	0.5
LTU	577	1	4	1.8	0.1	588	0	5	0	7.3	1.0
MON	36	0	3	1.1	0.0	35	0	3	0	6.7	1.5
MPH	783	1	2	2.0	-0.5	791	0	3	0	7.6	0.8
NAT	20	0	0	1.4	-0.6	20	0	5	5	10.0	3.6
NCA	22	0	0	2.1	0.1	22	0	0	0	6.3	1.5
NWA	2956	0	1	1.9	0.9	3035	0	2	1	8.0	1.1
PAC	25	0	8	2.3	0.2	25	0	8	0	11.3	2.5

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RAM	45	2	4	2.1	0.1	42	0	5	0	8.8	1.2
RCH	108	3	100	3.0	0.8	108	0	100	0	11.4	3.2
RJA	95	1	5	2.7	0.7	95	0	2	0	8.0	-0.1
ROY	132	0	5	1.6	-0.4	138	0	6	0	8.9	1.4
RRR	125	0	10	2.5	-0.2	127	1	13	2	9.5	2.0
SAB	48	2	4	1.8	-0.1	48	0	0	0	6.3	1.5
SAS	1101	0	1	2.0	0.3	1098	0	2	0	7.3	0.7
SIA	79	0	4	2.0	-1.3	84	0	6	1	7.0	0.1
SLR	73	1	19	2.2	-0.5	70	0	20	0	8.9	1.0
SPP	135	1	7	2.7	1.0	135	0	6	0	8.6	0.5
SSV	57	0	0	1.7	-0.1	59	0	2	0	6.4	0.6
SVA	97	0	6	2.0	0.7	99	0	100	1	11.8	1.9
SWR	139	0	1	1.3	0.1	141	0	1	0	6.9	1.3
TAP	410	1	5	1.7	-0.1	402	0	8	0	8.8	1.2
THY	34	3	6	1.6	-0.5	34	0	32	0	15.6	2.2
TOW	134	0	2	1.7	-0.1	135	0	1	0	7.8	0.6
TSC	206	0	2	1.5	0.3	214	0	3	0	7.2	1.2
TWA	1581	0	1	1.8	0.0	1576	0	3	0	7.8	1.2
UAL	1743	0	2	2.0	-0.4	1750	0	1	0	6.9	0.8
ULE	235	1	3	1.7	0.3	243	0	1	0	6.6	0.4
UPS	202	1	16	1.5	0.2	204	0	17	0	8.0	0.9
USA	384	1	1	1.6	-0.1	381	0	2	0	7.0	1.2
VIR	177	0	2	1.9	-0.4	172	0	3	0	8.0	1.8
VKG	57	4	7	2.5	1.3	55	0	7	0	8.2	-0.5
WOA	23	9	4	4.0	3.3	29	0	3	0	7.4	-0.6
BA	7340	0	11	1.4	0.4	7338	0	11	0	6.9	1.1
KL	4034	0	12	1.5	0.7	4034	0	11	0	6.6	1.3
LH	823	0	1	1.8	0.3	821	0	0	0	6.2	1.1
SV	187	0	0	1.2	0.5	187	0	0	0	6.2	1.2
N	416	1	100	2.6	1.2	445	0	5	0	9.0	1.5

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	22	0	13.8	16.4	-8.8
DBBH	12	Z	100	25	0	19.7	19.8	2.1
DBLK	00	Z	100	1	0	0.0	25.0	25.0
DBLK	12	Z	100	25	0	19.2	25.8	17.2
EHOA	12	Z	100	17	0	12.7	20.8	16.5
ENQT	00	Z	100	1	0	0.0	12.0	-12.0
ENQT	12	Z	100	3	0	4.9	8.0	-6.3
FNOR	00	Z	100	13	0	15.2	20.6	13.8
FNOR	12	Z	100	13	0	18.8	19.8	6.2
FNOU	00	Z	100	16	0	11.6	15.8	10.8
FNOU	12	Z	100	11	0	13.6	14.4	4.7
FNPH	00	Z	100	14	0	9.2	9.4	2.0
FNPH	12	Z	100	11	0	11.7	12.4	-4.3
FNRS	00	Z	100	13	0	10.0	10.7	3.8
FNRS	12	Z	100	12	0	45.9	46.8	8.7
JBOA	00	Z	100	1	0	0.0	5.0	-5.0
LDWR	00	Z	100	30	0	8.9	11.2	6.9
LDWR	12	Z	100	29	0	12.5	14.4	-7.2
NPH	00	Z	100	1	0	0.0	12.0	-12.0
OXVH2	00	Z	100	3	0	19.1	25.1	-16.3
OXVH2	12	Z	100	2	0	21.0	64.5	-61.0
OXYH2	00	Z	100	19	0	11.3	12.6	5.5
OXYH2	12	Z	100	20	0	18.9	19.0	-2.3
SHIP	00	Z	100	8	0	25.3	27.0	9.4
SHIP	12	Z	100	6	0	18.8	33.7	28.0
SHIPAF	00	Z	100	1	0	0.0	2.0	2.0
SHIPS	00	Z	100	6	0	22.0	24.7	11.3
SHIPS	12	Z	100	3	0	3.3	39.8	39.7
UCKZ	00	Z	100	1	0	0.0	98.0	98.0
V2EZ	00	Z	100	12	0	12.8	15.6	8.8
V2EZ	12	Z	100	11	0	13.8	21.7	16.7
V2LX	00	Z	100	1	0	0.0	39.0	39.0
V2VM	00	Z	100	11	0	19.3	26.6	18.4
V2VM	12	Z	100	12	0	21.8	28.0	17.7
WTEU	00	Z	100	1	0	0.0	17.0	17.0
XXBA	12	Z	100	5	0	51.5	90.2	74.0
03953	00	Z	100	30	0	10.3	16.7	13.2
03953	12	Z	100	29	0	11.2	11.2	1.4
04018	00	Z	100	30	0	14.4	27.0	22.8
04018	12	Z	100	28	0	14.9	21.5	15.5
04220	00	Z	100	29	0	13.4	21.8	17.2
04220	12	Z	100	30	0	14.8	21.6	15.8
04270	00	Z	100	29	0	27.2	28.1	-7.2
04270	12	Z	100	30	0	14.4	15.0	3.9
04339	00	Z	100	29	0	13.1	17.4	11.4
04339	12	Z	100	27	0	16.0	20.9	13.4
04360	00	Z	100	29	0	11.0	15.3	10.6
04360	12	Z	100	30	0	13.2	17.4	11.4
08508	00	Z	100	29	0	12.8	17.2	11.5
08508	12	Z	100	30	0	22.2	22.7	4.8
08522	00	Z	100	19	0	10.0	22.8	20.5
08522	12	Z	100	19	0	7.2	8.9	5.2
60020	00	Z	100	25	0	13.4	31.0	27.9
60020	12	Z	100	24	0	11.0	16.5	12.3
71600	00	Z	100	28	0	16.1	16.6	-3.8
71600	12	Z	100	30	0	10.4	11.9	-5.8
72201	00	Z	100	25	0	12.0	24.7	21.6
72201	12	Z	100	25	0	12.3	21.8	18.0
72402	00	Z	100	29	0	23.6	27.0	13.1
72402	12	Z	100	29	0	27.4	37.6	25.7
74494	00	Z	100	27	0	18.4	30.9	24.9
74494	12	Z	100	29	0	18.1	45.1	41.3
78016	00	Z	100	21	0	13.1	13.1	0.4
78016	12	Z	100	25	0	13.9	16.8	-9.4

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.1	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	22	0	11.0	11.2	2.0
DBBH	12	Z	500	25	0	12.4	12.5	0.9
DBLK	00	Z	500	1	0	0.0	20.0	-20.0
DBLK	12	Z	500	24	0	25.2	26.0	-6.4
EHOA	12	Z	500	17	0	8.0	12.0	8.9
ENQT	00	Z	500	8	0	19.7	20.0	3.5
ENQT	12	Z	500	8	0	19.7	19.8	-2.3
FNOR	00	Z	500	14	0	9.1	10.1	4.3
FNOR	12	Z	500	14	0	8.0	8.0	0.1
FNOU	00	Z	500	16	0	8.5	11.7	8.0
FNOU	12	Z	500	11	0	9.7	13.4	9.3
FNPH	00	Z	500	14	0	9.4	9.4	0.2
FNPH	12	Z	500	12	0	11.9	12.1	-2.3
FNRS	00	Z	500	13	0	8.3	8.4	-0.6
FNRS	12	Z	500	13	0	29.8	30.4	5.8
LDWR	00	Z	500	30	0	10.3	11.8	5.8
LDWR	12	Z	500	29	0	11.1	11.6	-3.2
NPH	00	Z	500	1	0	0.0	34.0	-34.0
OXVH2	00	Z	500	3	0	9.0	9.3	-2.3
OXVH2	12	Z	500	2	0	26.0	46.0	-38.0
OXYH2	00	Z	500	20	0	11.7	14.5	-8.5
OXYH2	12	Z	500	20	0	9.8	13.5	-9.3
SHIP	00	Z	500	8	0	5.9	9.8	7.9
SHIP	12	Z	500	7	0	10.7	17.9	14.3
SHIPAF	00	Z	500	1	0	0.0	9.0	9.0
SHIPS	00	Z	500	6	0	19.0	21.1	9.2
SHIPS	12	Z	500	4	0	9.9	10.7	-4.0
UCKZ	00	Z	500	1	0	0.0	20.0	20.0
V2EZ	00	Z	500	12	0	5.8	13.3	12.0
V2EZ	12	Z	500	12	0	10.7	19.2	16.0
V2LX	00	Z	500	1	0	0.0	49.0	49.0
V2VM	00	Z	500	11	0	9.3	10.7	5.3
V2VM	12	Z	500	13	0	13.8	14.5	4.5
WTEU	00	Z	500	1	0	0.0	23.0	23.0
XXBA	12	Z	500	8	0	13.4	18.5	12.8
03953	00	Z	500	30	0	11.2	14.4	9.1
03953	12	Z	500	29	0	8.7	9.1	2.8
04018	00	Z	500	30	0	13.5	14.6	5.6
04018	12	Z	500	29	0	15.2	15.4	2.2
04220	00	Z	500	30	0	10.3	10.4	1.3
04220	12	Z	500	30	0	15.0	15.0	1.2
04270	00	Z	500	29	0	22.8	24.1	-7.8
04270	12	Z	500	30	0	15.8	16.3	-3.8
04339	00	Z	500	29	0	14.4	15.0	-4.3
04339	12	Z	500	28	0	12.9	12.9	-1.0
04360	00	Z	500	29	0	11.9	11.9	-0.1
04360	12	Z	500	30	0	11.4	12.9	-6.2
08508	00	Z	500	29	0	13.6	14.9	6.1
08508	12	Z	500	30	0	22.2	23.2	6.8
08522	00	Z	500	19	0	5.7	10.4	8.6
08522	12	Z	500	19	0	8.0	8.2	1.9
60020	00	Z	500	25	0	11.9	22.1	18.7
60020	12	Z	500	24	0	10.1	16.8	13.4
71600	00	Z	500	28	0	13.9	15.6	-7.2
71600	12	Z	500	30	0	9.8	10.1	-2.4
72201	00	Z	500	27	0	9.2	12.2	8.0
72201	12	Z	500	24	0	6.7	7.0	2.0
72402	00	Z	500	28	0	8.2	8.3	1.1
72402	12	Z	500	29	0	7.2	9.6	6.3
74494	00	Z	500	28	0	9.0	9.3	-2.5
74494	12	Z	500	29	0	8.1	8.1	0.4
78016	00	Z	500	20	0	6.7	7.1	-2.3
78016	12	Z	500	25	0	10.0	10.0	0.4

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: June, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	21	0	0	0.0	1.1	0.8
DBBH	12	V	100	25	0	0	1.7	0.3	1.0
DBLK	00	V	100	1	0	0	1.8	1.2	4.3
DBLK	12	V	100	25	0	0	1.8	0.7	-0.8
EHOA	12	V	100	17	0	0	2.2	-0.2	-0.4
ENQT	00	V	100	1	0	0	3.2	2.4	-2.0
ENQT	12	V	100	2	0	0	3.2	2.4	1.9
FNOR	00	V	100	13	0	0	3.2	0.1	0.1
FNOR	12	V	100	13	0	0	2.8	-0.8	0.7
FNOU	00	V	100	16	0	0	2.8	-0.7	-0.8
FNOU	12	V	100	11	0	0	3.9	0.6	2.1
FNPH	00	V	100	14	0	0	2.1	-0.9	0.3
FNPH	12	V	100	11	0	9	2.6	-0.4	0.1
FNRS	00	V	100	13	0	0	3.3	0.3	-0.6
FNRS	12	V	100	12	0	0	2.6	-1.4	-0.6
LDWR	00	V	100	29	0	0	4.9	0.4	-0.2
LDWR	12	V	100	28	0	0	1.3	0.8	-0.3
NPH	00	V	100	1	0	0	1.1	0.7	-2.0
OXVH2	00	V	100	3	0	0	1.1	-4.8	2.8
OXVH2	12	V	100	2	0	0	1.1	-5.3	-0.1
OXYH2	00	V	100	19	0	0	1.1	-1.0	0.8
OXYH2	12	V	100	20	0	0	1.8	-0.6	0.5
SHIP	00	V	100	6	0	0	1.9	-0.5	0.0
SHIP	12	V	100	5	0	0	1.9	-1.8	1.4
SHIPAF	00	V	100	1	0	0	1.9	14.0	-0.2
SHIPS	00	V	100	2	0	0	1.9	1.3	-1.0
SHIPS	12	V	100	1	0	0	1.9	-0.6	2.5
UCKZ	00	V	100	1	0	0	1.9	-1.3	1.3
V2EZ	00	V	100	12	0	0	3.3	0.8	-0.6
V2EZ	12	V	100	11	0	0	4.4	-0.5	-0.4
V2LX	00	V	100	1	0	0	2.0	9.6	10.6
V2VM	00	V	100	11	0	0	2.0	-2.4	0.5
V2VM	12	V	100	12	0	0	3.3	-1.1	-1.0
WTEU	00	V	100	1	0	0	2.6	0.6	-0.4
XXBA	12	V	100	3	0	0	5.4	-4.4	3.0
03953	00	V	100	28	0	0	2.0	-0.2	0.6
03953	12	V	100	29	0	0	1.7	-0.6	1.1
04018	00	V	100	30	0	0	2.1	-1.0	0.2
04018	12	V	100	28	0	0	1.6	-0.2	-0.2
04220	00	V	100	29	0	0	4.5	-0.3	1.9
04220	12	V	100	30	0	0	2.1	0.0	0.7
04270	00	V	100	29	0	0	1.8	-1.4	1.9
04270	12	V	100	30	0	0	2.6	-1.3	0.7
04339	00	V	100	29	0	3	2.1	-0.3	0.5
04339	12	V	100	26	0	0	3.2	0.2	-0.2
04360	00	V	100	28	0	3	1.8	-1.3	0.7
04360	12	V	100	30	0	3	4.6	-1.2	0.7
08508	00	V	100	30	0	0	3.2	1.2	0.2
08508	12	V	100	28	0	0	2.6	-0.3	0.6
08522	00	V	100	19	0	0	2.7	0.9	0.1
08522	12	V	100	19	0	0	2.9	2.0	0.2
60020	00	V	100	25	0	0	2.7	1.1	-0.3
60020	12	V	100	24	0	0	3.2	1.8	0.2
71600	00	V	100	28	0	0	2.6	-0.1	-0.2
71600	12	V	100	30	0	0	2.6	0.5	-0.5
72201	00	V	100	24	0	0	1.9	-0.1	1.1
72201	12	V	100	24	0	0	3.1	-0.2	0.4
72402	00	V	100	27	0	0	2.4	-1.3	-1.0
72402	12	V	100	29	0	0	3.5	1.1	0.1
74494	00	V	100	27	0	0	2.6	0.0	0.4
74494	12	V	100	29	0	0	2.0	0.6	-0.4
78016	00	V	100	19	0	0	3.0	-0.8	-0.9
78016	12	V	100	20	0	0	1.9	0.8	-0.8

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)

MONITORING CENTRE: BRACKNELL

MONTH: June, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS: Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	22	0	0	0.0	-0.2	-0.4
DBBH	12	V	500	25	0	0	3.9	-0.2	0.1
DBLK	00	V	500	1	0	0	3.0	-3.6	-1.6
DBLK	12	V	500	24	0	0	3.0	0.4	-1.6
EHOA	12	V	500	17	0	0	4.2	0.7	2.1
ENQT	00	V	500	8	0	0	3.6	0.6	0.7
ENQT	12	V	500	7	0	0	3.6	-0.6	-0.8
FNOR	00	V	500	14	0	0	3.6	-0.6	-0.3
FNOR	12	V	500	13	0	0	2.6	-0.2	1.1
FNOU	00	V	500	16	0	0	2.8	-0.8	-0.2
FNOU	12	V	500	11	0	0	2.6	-0.3	-1.4
FNPH	00	V	500	14	0	0	1.8	-1.2	0.1
FNPH	12	V	500	11	0	9	3.3	-0.2	-0.1
FNRS	00	V	500	13	0	0	2.5	0.3	-1.2
FNRS	12	V	500	13	0	7	2.5	-2.4	-1.2
LDWR	00	V	500	29	0	0	4.9	1.3	-0.5
LDWR	12	V	500	28	0	0	3.4	-0.2	0.9
NPH	00	V	500	1	0	0	2.4	1.6	-0.6
OXVH2	00	V	500	3	0	0	2.4	-2.9	2.4
OXVH2	12	V	500	2	0	0	2.4	-3.9	-0.8
OXYH2	00	V	500	20	0	0	2.4	0.0	0.6
OXYH2	12	V	500	20	0	0	3.2	1.2	-0.8
SHIP	00	V	500	8	0	0	3.5	4.4	-1.8
SHIP	12	V	500	6	0	0	3.5	0.0	-0.2
SHIPAF	00	V	500	1	0	0	3.5	8.9	-0.1
SHIPS	00	V	500	4	0	0	3.5	-0.2	-2.8
SHIPS	12	V	500	4	0	0	3.5	-1.0	6.1
UCKZ	00	V	500	1	0	0	3.5	0.1	0.2
V2EZ	00	V	500	12	0	0	3.9	0.8	-0.7
V2EZ	12	V	500	12	0	0	3.0	0.9	-1.3
V2LX	00	V	500	1	0	0	2.7	-4.5	-2.6
V2VM	00	V	500	11	0	0	2.7	-0.5	-1.6
V2VM	12	V	500	13	0	0	2.1	-1.1	-0.9
WTEU	00	V	500	1	0	0	3.1	-0.8	-0.5
XXBA	12	V	500	7	0	0	3.8	0.6	0.3
03953	00	V	500	30	0	0	2.9	-0.2	-0.5
03953	12	V	500	29	0	0	2.9	0.1	-1.1
04018	00	V	500	29	0	3	2.3	1.5	-0.7
04018	12	V	500	29	0	0	4.9	0.5	-1.4
04220	00	V	500	30	0	0	4.2	-0.9	1.2
04220	12	V	500	30	0	0	3.6	-0.1	0.1
04270	00	V	500	29	0	0	3.7	-0.4	1.4
04270	12	V	500	30	0	0	3.6	0.5	0.3
04339	00	V	500	29	0	0	3.5	0.0	-0.8
04339	12	V	500	28	0	3	3.5	-2.0	-0.8
04360	00	V	500	27	0	0	6.1	-0.3	-0.1
04360	12	V	500	30	0	0	3.0	-1.0	-0.8
08508	00	V	500	29	0	0	3.5	2.1	-0.1
08508	12	V	500	28	0	0	5.1	1.8	-0.8
08522	00	V	500	19	0	0	4.1	0.1	-0.7
08522	12	V	500	19	0	0	2.2	0.0	-0.7
60020	00	V	500	25	0	0	2.7	0.9	-0.8
60020	12	V	500	24	0	0	2.9	0.9	-0.1
71600	00	V	500	28	0	0	3.0	0.4	1.3
71600	12	V	500	30	0	0	3.5	0.4	0.5
72201	00	V	500	26	0	0	2.6	-0.1	0.0
72201	12	V	500	24	0	0	2.1	-0.7	0.2
72402	00	V	500	27	0	0	3.1	1.0	0.8
72402	12	V	500	29	0	0	2.6	-1.0	0.7
74494	00	V	500	27	0	0	2.9	0.7	0.2
74494	12	V	500	29	0	0	2.5	0.0	1.7
78016	00	V	500	20	0	0	4.5	-0.9	0.1
78016	12	V	500	24	0	0	2.1	-0.9	0.9

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45